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ABSTRACT

The guide, intended to help teachers, parents, and community workers throughout the world develop educational services for children with severe cerebral palsy, is published in English, French, Spanish, Arabic, and Chinese. The 11 practitioner-contributed chapters stress specific intervention techniques based on the practitioners' own experiences in the fields of speech therapy, special education, occupational therapy, and psychology. Chapters have the following titles and authors: "Cerebral Palsy--a Multifaceted Condition" (Henning Rye); "Communication and Structured Total Communication" (Miriam Donath Skjorten); "Coping with Common Learning Disabilities in Children with Cerebral Palsy" (Gerd Gylder Corneliussen, Marit Lund, and Elsbet Nilsen); "Language and Speech as a Tool for Communication" (Turid Blix); "Readiness for Reading" (Jorunn Fiveland); "Eating and Feeding" (Miriam Donath Skjorten); "Teaching Mathematics" (Gerd Gylder Corneliussen); "Coping with Writing Problems" (Gerd Gylder Corneliussen); "Preparing for Adult Life" (Gerd Gylder Corneliussen, Marit Lund, and Elsbet Nilsen); "Educational Aids" (Corneliussen, Lund, and Nilsen); and "Quality of Life" (Miriam Donath Skjorten). Also provided are a brief glossary, 25 references, and 11 addresses of relevant organizations and programs. (DB)

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Children with Severe Cerebral Palsy

AN EDUCATIONAL GUIDE

Editors:
Henning Rye and Miriam Donath Skjørten

EC 300 200

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PREFACE

This guide is the seventh in the Series on Guides for Special Education published by Unesco.

The guides, which are intended for teachers, parents and community workers, aim at stimulating discussion on basic knowledge, methods and techniques relevant to the education of handicapped persons, and offer practical advice for action in this field.

While the major part of the guide addresses issues specifically related to the education of children with severe cerebral palsy, chapter one in particular touches on new conceptualization of disability and new orientations for educational provision. Issues such as early learning experience, flexible school curriculum, integrated education, covered in this chapter, are equally relevant to all children with special educational needs.

The views and opinions expressed in this guide are those of the author and do not necessarily reflect those of Unesco.

Earlier topics in the Series:

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2. Working Together: Guidelines for Partnership between Professionals and Parents of Children and Young People with Disabilities;
3. Testing and Teaching Handicapped Children in Developing Countries;
4. Education of Deaf Children and Young People;
5. Language and Communication for the Young Disabled Person;
6. Education of Visually Impaired Pupils in Ordinary School.

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Community Based Rehabilitation Services: Prospects, Problems, New Directions.

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AN EDUCATIONAL GUIDE

Editors:
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WITH SEVERE CEREBRAL PALSY

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Children with Severe Cerebral Palsy

An Educational Guide

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INTRODUCTION

Derek Lancaster-Gay

Barely thirty years ago cerebral palsy and other severe developmental disabilities were regarded as a major barrier to education; at that time the emphasis had been on the intellectual handicap and the majority of children with these disabilities were seen as 'ineducable' and treated as such. This usually meant placement in a special care unit or in a subnormality hospital.

Parental pressures and the work of voluntary agencies interested in these problems resulted in the establishment of special schools for cerebral palsy children and others with similar related disabilities. The 1950s were years of experiment and professional learning during which it became evident that meaningful education for these children was indeed possible regardless of intellectual deficiencies. These were years of trial and error but they were also the years when professionals were able to learn and to develop techniques and skills to deal with the complexities of cerebral palsy.

We have progressed a long way in the years since the first special school was established. Perhaps the most significant realization was the fact that the education of a cerebral palsy child depended not just upon the teacher and her newly acquired skills but upon other professionals such as the clinician, the therapists, the psychologist and the aids technician, working not independently but as a cohesive team with the parent as an essential member of that team. To achieve this inter-disciplinary approach to the management of the child was for some a difficult process as it meant the breaking down of professional barriers and the establishment of a working relationship in which each member of the team was dependent upon the others.

During this period the parent, too, assumed a new and vital role for it was with her/his parent that the disabled child would spend most of his time and it was at home that the child would put into practice the skills of living he was learning at school. The parent must know and understand what is going on, be involved in the work of the team so far as this affects the child and be taught to undertake much of this work herself at home. Parents have, after all, an enormous understanding of their own child and as such have a major contribution to make to the work of the team. Nor should the role of brothers and sisters or the grandparents be overlooked.

But to co-operate with parents, specialists need to be able to co- operate with each other, to have a holistic approach to the management of a disabled child and to

regard their own particular skills as just one of a series of skills which, when combined, will address the whole child and not just her/his presenting symptoms. The cerebral palsy child will require treatment and needs education at school. It is important for the teacher to understand the therapy needs just as it is essential for the therapist to understand the practical implications of the child's day in the class room. The child's will to learn will not be taught at the classroom desk nor discovered on the floor of the therapy room; it will be established progressively by the child's awareness of achievement. This will come from mutual co-operation by all concerned, including the home.

This much we have learned in the past thirty years. Techniques have been developed, adequate equipment and aids to communication produced and teachers trained in this field. But at the same time attitudes towards severe disability have also changed; the very fact that it is now established that cerebral palsy children have the same aspirations to an education as their peers and the fact that disability is no longer regarded as something to be hidden away have combined to demand a new approach to the education of disabled children or, to use the present terminology, of children with special needs.

It was not surprising therefore to find that education in special institutions was regarded as an unacceptable approach and the past two decades have been marked by the search for a more acceptable alternative, one that does not isolate the disabled child from her/his peers. Thus many of those countries which pioneered special schools thirty years ago now insist on full integration of disabled children in ordinary schools. Inevitably the dialogue continues; there remain excellent arguments in support of special schooling and the lobby in favor of integrated education has strong emotional arguments in support of their concept. How successful integrated education really is has yet to be fully tested; so much will depend upon such factors as the training of staff, the availability of the right equipment and the willingness of teachers to learn about the problems of disability. What is clear, however, is that what disabled children might lose by their attendance at an ordinary school will be more than offset by their gains in integration within the community in which they will spend most of their lives.

This guide is an aid to teachers of severely disabled children suffering from cerebral palsy and is intended for those with little experience in this field and without immediate support to hand. For those who are interested in the more specialist applications, further and supplementary reading is recommended. This is a guide and must be regarded as such. It should go hand in hand with personal experience and it is this experience upon which skills are based.

Disabled children have a desire to learn and they have the ability to do so; the role as teacher is not so much to teach as to prepare facilities and encourage the child to learn for himself - personal achievement is a great reward for personal effort.

The authors of this guide have done much to simplify and to explain their skills and those of their colleagues in readily understandable terms for the benefit of professionals working with cerebral palsy, perhaps for the first time, and are to be commended for their approach.

CEREBRAL PALSY AND THE CHILD - A MULTIFACETED CONDITION

Henning Rye

CEREBRAL PALSY AND THE CHILD

1. What Is Cerebral Palsy?

The term Cerebral Palsy represents a group of heterogeneous conditions, neurological as well as psychological and educational. Neurologically the condition is usually defined as a permanent impairment of movement and posture resulting from a non-progressive brain disorder, due to events during pregnancy, delivery, the neonatal period or the first years of life, or hereditary factors. This definition is commonly used by researchers in this field (Bax, 1964; Hagberg, 1978). The condition is further classified according to clinical neurological signs.

Spastic CP

This is the largest group. The most salient neurological symptoms are marked rigidity of movement and inability to relax their muscles. The degree of handicap varies from only one arm or leg being affected, to both arm and leg on one side, or affection of all four limbs or more or less the whole body.

About 75 per cent of CP children show spasticity as their main neurological symptom.

Athetoid CP

In this group the main neurological symptoms are seen as involuntary movements, which interfere with voluntary normal movements of the body, for example writing, walking and speaking are often affected.

About 10 per cent have athetosis.

Ataxic CP

The dominating syndrome in this group is in co-ordination of voluntary movements frequently resulting in unsteady gait and poor body balance; often eye-hand co-ordination is affected.

About 5 per cent of children with CP show these symptoms, a condition which is comparatively rare.

Mixed forms of CP

In this group, which represents about 10 per cent of children with CP, are included children with cerebral palsy who show a mixture of the symptoms described above.

About 10 per cent of children with CP.

2. Incidence of cerebral palsy

Estimates of the incidence of cerebral palsy have varied considerably, mainly due to differing techniques of case finding, differing definitions of cerebral palsy and changing demographic trends and social conditions. According to studies carried out in some developed countries (Hagberg, 1978; Lagergren, 1981; Glenting, 1976; Healy, 1983), the incidence of cerebral palsy is about 2 per 1000 live births or slightly lower.

With regard to the incidence of cerebral palsy in developing countries, detailed surveys are lacking. The existing sources of information are mainly the estimates made by medical or health experts in developing countries, and not based on systematic surveys. The estimated rates of incidence vary from about 2.5 per 1000 births in groups of immigrants in Israel, born in Afro/Asian countries (Margulec, 1966), to about 5 per 1000 in Mexico (personal communication from Asociacion pro Paralitico Cerebrale). It is reasonable to believe that the variations in estimated incidence or prevalence rates vary for reasons that relate as much to the organization and availability of services as to the actual numbers of handicapped people.

3. Causes of cerebral palsy

Handicapping conditions that affect children may have their origins in the prenatal period (25 per cent), commonly defined as the time up to the 27th week of the gestation period. Others have their onset around the time of birth or in the perinatal period (48 per cent) from the 27th week of gestation through the first week after birth, and still others may acquire cerebral palsy during the postnatal period or the first years of life (6 per cent), (Hagberg and Olow, 1975).

A number of aetiological factors originating pre, peri or postnatally are associated with increased risk for cerebral palsy. Prenatal risk factors such as congenital malformations, lack of oxygen (asphyxia) and infection are associated with cerebral palsy, while premature births, prolonged labour, breech presentation and lack of oxygen may represent increased risk at the perinatal stage. During the postnatal period infections such as meningitis and encephalitis, excessive jaundice, rubella, and head trauma can increase the risk for cerebral palsy.
There is, however, rarely a single cause to cerebral palsy, in most cases it is caused

by a combination of contributing conditions. Maternal characteristics such as adolescent pregnancy, low socio-economic status and poor health are associated with increased risk of cerebral palsy in children. In only a small percentage of families is more than one child affected, and hereditary causes are therefore considered rare. Although a great deal is known about the causes of cerebral palsy, in as many as 25 per cent of affected cases no definite cause or aetiological factor can be pin-pointed.

4. Additional dysfunctions

Although a definition of cerebral palsy focusing on disorders of movement and posture may be useful from a medical diagnostic standpoint, it leaves out a number of associated dysfunctions or deficits that are common and have to be properly addressed in order to ensure an optimal development and habilitation. Among the dysfunctions frequently described are visual defects, hearing loss, other sensory defects, disorders of comprehension, or the expressive use of language, and cognitive dysfunctions. In addition seizures and orthopedic problems are commonly found.

While motor disabilities are important factors with regard to the potential development towards leading a meaningful, independent life, locomotion is but one single consideration. Ability to communicate and mastery of daily living, including transportation, which is essential to personal independence and obtaining employment, are probably more important to the outcome. In order to understand more completely the function of cerebral palsied people, it is not enough to identify the effect of isolated additional dysfunctions; the interaction of multiple dysfunctions in each individual person's mastery and adjustment must be appreciated.

Some of the more frequently associated dysfunctions are discussed below.

5. Associated dysfunctions

Visual dysfunction

The most common visual disturbance associated with cerebral palsy is strabismus (approximately 50 per cent); nystagmus, visual field cuts, refractive errors and other oculo-motor defects are frequently found.

Children with cerebral palsy often demonstrate an inability to interpret visual symbols. Visual processing dysfunctions may be responsible for inability to identify letters, but at other times the difficulty may be due to cognitive dysfunctions. The educational implications of visual dysfunctions may easily be

underestimated, and it is therefore important that visual abilities in children with cerebral palsy are assessed as early as possible.

Visual-perceptual and visual-motor dysfunction

Many children with cerebral palsy demonstrate problems with matching shapes, distinguishing shapes that appear similar, seeing a drawing as separate from its surrounding background and differentiating between varying directions of lines or forms, for example distinguishing 'b' from 'd'. Other children may have normal perception of forms, but great difficulties in drawing and writing, completing puzzles and building with blocks, bricks, etc.

These problems are known as visual-motor dysfunctions, and are more often found in children with spastic than athetoid cerebral palsy. This kind of dysfunction is also frequently found in children without diagnosed motor, visual or cognitive problems, and are considered to be due to central cerebral dysfunctions that mainly manifest themselves in activities demanding a high level of co-ordination.

Auditive dysfunctions

Hearing impairment is frequently found in populations with cerebral palsy.

Significant hearing loss may easily be overlooked in children with speech defects and/or cognitive disability. If educationally significant hearing loss is not diagnosed at an early pre-school age and proper educational help given, eventually combined with a hearing aid, the language development may be seriously affected.

Other sensory dysfunctions

Any child with significant left-right asymmetry is at risk for sensory impairment. Among cerebral palsied children sensory impairment is more prevalent in children with hemiplegia. The dysfunctions often reported relate to stereognostic perception (e.g. tactile-kinesthetic perception of objects), two point discrimination, sense of position, sharp-dull discrimination, pain, light touch and temperature sense, (Shapiro et al., 1983). Assessment of the sensory functions mentioned above may have great implications for educational measures as they are of significant importance for children's ability to explore the environment.

Communication disorders

To many children with severe cerebral palsy the communication problem is more handicapping than the inability to walk. In addition to the problems related to hearing loss, speech disorders and language disorders are often serious obstacles to communication. These dysfunctions are not independent and may coexist in the same child, so that when improvement in, for example, hearing does not always lead to more advanced speech or speech perception, the reason may be a dysfunction

in the central processing of spoken language (see Chapters II and IV).

Speech defects

Many speech defects relate to reduced control of facial and respiratory muscles, or the muscles of the tongue or lips. The articulation problems may range from minor difficulties to a complete absence of speech. Lack of speech may be due to a combination of factors that in addition to articulation defects also may include language dysfunction and impaired intelligence

Language dysfunction

Language dysfunction seems to be a frequent problem in communication disorders in children with cerebral palsy. This is an important factor to take into account when treatment of speech and language disorders is planned. When deficits in central processing of language are present, it is unlikely that articulation therapy alone will be effective or sufficient to secure a satisfactory improvement of communication.

Children with central processing deficits need an educational approach suited to extend their knowledge of concepts as well as their use in meaningful communication. Even communication by alternative means may be difficult for children with severe central language dysfunction.

Emotional and behavioural problems

Children with severe cerebral palsy grow up in a life situation that is very different from that of other children. They are already from the beginning hampered in their exploration of the environment, in communication and interaction with family and peers, and in developing a sense of competence and self-confidence. When children with brain damage are reported to develop behavioral disorders four to five times more often than children without brain damage, this may well be related first of all to the fact that brain damage often reduces the ability to learn from experience, to solve problems and overcome obstacles in daily life, and to be able to adjust to new situations in a flexible way. Their reactions are, however, normal reaction in relation to the frustrations they experience because of their disabilities.

The idea that emotional and behavioural problems in children with brain damage are in principle different from problems in children without brain damage is not supported by modern research. Although cerebral palsy may affect a child's mental ability to understand and solve problems originating in the interaction with others, it is in many cases clear that the emotional disturbances are secondary to difficult situations. Examples of situations demanding new adjustments could be: communication difficulties, hospitalization, surgery, entering school, change of school, puberty and adolescent concerns about feeling isolated, developing sexuality and a wish to become independent while experiencing continued dependence because

of motor and other handicaps.

Professional support and guidance as well as close co-operation with teachers could probably diminish the secondary emotional disturbances often noticed in children with cerebral palsy.

Cognitive dysfunction

One of the most commonly associated deficits of cerebral palsy is cognitive dysfunction. Although there certainly are exceptions to the general finding that the children with greatest physical handicaps also have the poorest mental functioning, there seems to be a systematic relationship between the extent of the brain damage and the development of intelligence at the group level of research.

Subtle dysfunctions in central processing are difficult to assess however, especially in young children, and although most surveys report that approximately 40 to 50 per cent of cerebral palsied children are of subnormal intelligence, more than 25 per cent are functioning well within the normal ranges, and many of these are able to pursue academic education. A proper assessment of strengths and weaknesses in cognitive abilities is essential for developing an appropriate educational programme and expectations. This is essential to avoid frustrations for child, teacher and family.

6. Impairment, disability and handicap

The process towards handicap starts with impairment, which may lead to disability and which again may lead to handicap.

Impairment refers to any loss or abnormality of psychological, physical or anatomical function or structure.

Disability is any lack or restriction of ability, caused by an impairment, to perform an activity in the manner or within the range considered normal for a human being.

Handicap is a disadvantage caused by a disability that prevents or limits an individual's fulfillment of a role that is normal, depending on age, sex, and social and cultural factors.

Although prevention of impairment should be a main objective of social and health services in any country, impairments seem unfortunately inevitable throughout the world, and even more so in developing than in developed countries. Given this situation, what can very often still be done is through interventions, such as early home training programmes, pre-school education, schooling, and training for a

maximum of independence and meaningful activity. The goal is to prevent impairments and disabilities from becoming handicaps, or to reduce the handicapping impact as far as possible.

7. Early learning: important but not easy

Although it is possible to list many of the problems that are common in children with severe cerebral palsy, as done above, it is evident, however that different aetiological factors, inherited characteristics and environmental circumstances must lead to widely differing resources and developmental capacities, physical as well as mental. Despite the fact that the descriptions of development and the characteristics of children with biologically-based delays must remain general, it is possible, however, to describe some patterns that are similar to many of them.

Examples include difficulties in interactions between caregivers and children, delay in speech and language development which may easily lead to a mismatch between the parents' way of communicating and the children's capacities, lack of adequate control of attention and effective use of the social and physical environment, and delayed or deficient ability to learn systematic strategies in problem solving tasks. Moreover, children with severe cerebral palsy also show extraordinary difficulties in establishing reciprocal social relationships of some duration, problems that may be rooted in comprehensive physical disabilities, communication disorders, mental delays or very limited experience in social exchange.

Whatever developmental theories are used in order to conceptualize development in children, a common central denominator with regard to preconditions for early development is the ability and opportunity for interaction with people and objects. Theories about bonding and attachment as well as theories about cognitive development are based on the notion of the need for early interaction with caregivers as well as experience with the material environment.

The traditional focusing on aetiological factors and disabilities may easily lead to a reduction of understanding the development of handicap in impaired children as a result of limited ability to explore and experience the social and physical environment, and not just the result of a pathological or disturbed brain function. The extent to which the social and material world takes on meaning to a child depends on personal experience. An extremely limited interaction with the environment means reduced ability to understand and adapt to new experiences and less shared understandings with family, peers and the wider community. In order to develop meaningful, reciprocal social relationships, it is necessary to form attachments, to develop empathy with others, to learn the meaning of common concepts and to develop insights into other people's situations and the ability to act

in a flexible and reciprocal way.

Conceiving of how young children learn about the world, especially taking into account the theories of cognitive development of Jean Piaget, a theoretical framework also used in early education programmes (Hohmann, Banet and Weikart, 1979), it becomes evident that how to make 'active learning' become a reality to severely handicapped children is the crucial question. Today the terms 'active learning' and 'child initiated learning' are recognized as indicators of an educational approach that puts children's own activity in the centre of the learning process.

In position statements issued by National Association for the Education of Young Children in the United States in 1986, child-initiated activity is highly recommended as appropriate practice in early childhood programmes. The following citations make this position clear:

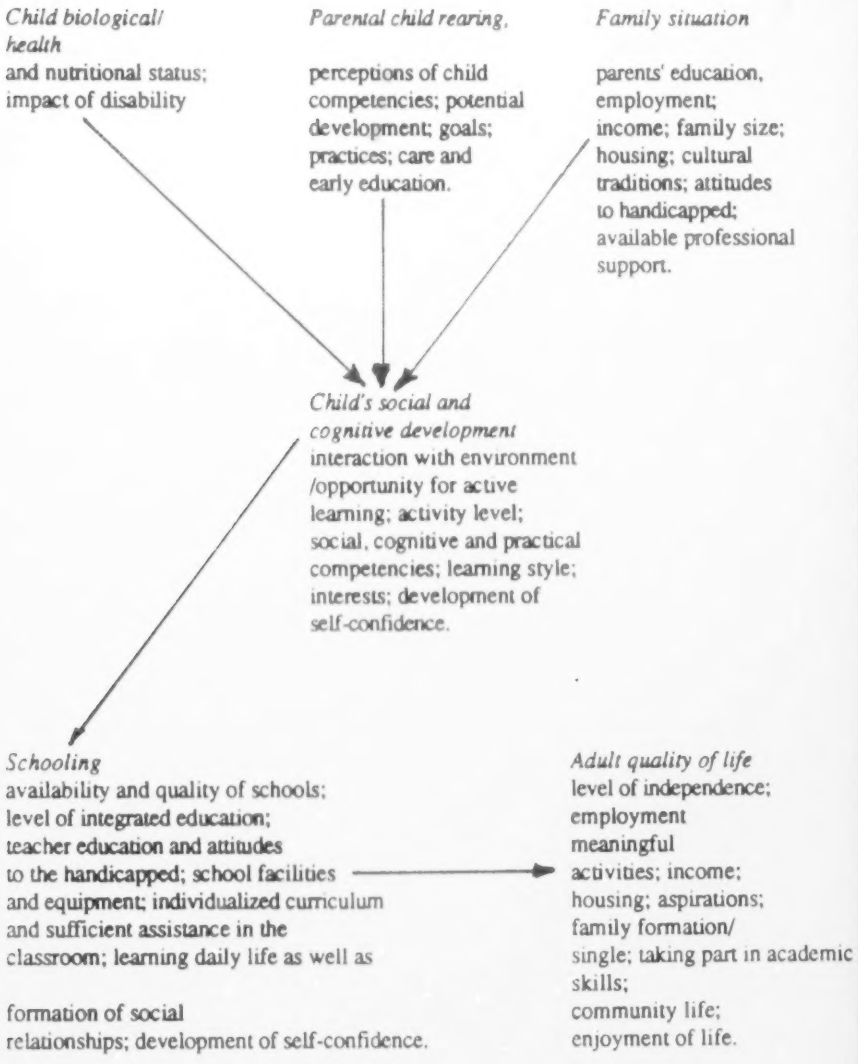
- 'Adults provide opportunities for children to choose from among a variety of activities, materials, and equipment; and time to explore through active involvement.' (Schweinhart, 1987, p. 10)
- 'Children select many of their own activities from among a variety of learning areas the teacher prepares.' (Schweinhart, 1987, p. 28)
- 'Much of young children's learning takes place when they direct their own play activities.' (Schweinhart, 1987, p. 6)
- 'Learning takes place as children touch, manipulate, and experiment with things and interact with people.' (Schweinhart, 1987, p. 27)

Recent research and developmental theories have served to clarify and extend the scientific basis for the importance of early experience. Today there seems to be a general agreement that the following ingredients are essential to all early child-caregiver interactions:

- Parental responsiveness contingent on child-initiated activity
- Adapted quality and quantity of verbal interactions
- Provision of a wide array of toys and other materials for child activity
- Parental or caregiver sensitivity and expression of warmth and affection
- The existence of social support network (Guralnick and Benneu, 1987)

'Active learning' refers to young children's needs for concrete or 'hands-on' experiences with people and things around them. Children's learning begins with experiencing real objects, equipment, tools and the use of things through acting upon them. For example, to learn about a ball, a child needs to play with it, push, roll, throw, etc.

Schematic presentation of some important influences in a handicapped child's formative years


Child biological/ health
and nutritional status; impact of disability
Parental child rearing,
perceptions of child competencies; potential development; goals; practices; care and early education.
Family situation
parents' education, employment; income; family size; housing; cultural traditions; attitudes to handicapped; available professional support.
Child's social and cognitive development
interaction with environment /opportunity for active learning; activity level; social, cognitive and practical competencies; learning style; interests; development of self-confidence.
Schooling
availability and quality of schools; level of integrated education; teacher education and attitudes to the handicapped; school facilities and equipment; individualized curriculum and sufficient assistance in the classroom; learning daily life as well as
formation of social relationships; development of self-confidence.
Adult quality of life
level of independence; employment meaningful activities; income; housing; aspirations; family formation/ single; taking part in academic skills; community life; enjoyment of life.

Active learning arises out of a child's interest in things and leads to exploration and experimentation; it represents valuable opportunities for positive interactions with caregivers. Such interactions in daily life situations not only foster emotional attachments, but lend caregivers continuous chances through their mediation of experiences to assist children in meaningful learning.

The question of how we can provide opportunities for severely handicapped children that allow an optimal development of abilities to discover and construct their own personal knowledge of the world is a challenging one for teachers as well as parents. The experience of active learning is essential to mental development in all children; for children who did not have this opportunity when younger, the provision of situations encouraging active learning are of central importance.

In order to be able to know what to do in assisting a child's learning in the best way possible, it is necessary to know about the child's actual abilities to establish contact and communicate, the possible ways the child can convey his or her interests or wishes, and how to influence the situations of daily life (in the classroom as well as at home) and what kind of toys, things, tools and learning aids, etc. a child can use in a controlled way. To obtain this information, a comprehensive assessment is necessary, covering the child's physical condition and needs, as well as mental functioning, home environment and needs for personal and practical support at home as well as at school.

In many places even in the affluent parts of the world, the necessary facilities for comprehensive assessments, counselling and follow-up of children and their families that should be based on regular assessments are not available. Naturally this is even more the case in developing countries, where the scarcity of professional assistance, especially in the rural districts and the urban slums, is the normal situation. In practical terms this means that many handicapped children grow up in families left to manage on their own as best they can, without counselling or advice from professionals such as paediatricians, psychologists, special educators, social workers, etc.

In such situations the opportunities for growth and development rest mainly on the resources of the families, the parents' understanding of handicapping conditions, their attitude and conception of upbringing of children, available time and energy for interacting with and assisting the children, and the family or community network to support children and parents.

Parents' or caregivers' perception of their children, including handicapped children, is to a large extent determined by the predominant conceptions of the society. These conceptions include how the particular society regards a disabled person's

capabilities and limitations, and may often reflect more of 'inherited' beliefs and myths than objective knowledge of the child's condition. If the parent's or caregiver's perception of a handicapped child implies lowered expectations of performance, such expectations may have a self-fulfilling influence on the child's behaviour and development. Parents may also become so involved with the specific handicap of a child that they fail to take care of other needs the child may have.

Often parents' attitudes and conceptions are reflected in stereotypical ways of interacting with children so that their relationship with a handicapped child may lead to reduced experiences, which is likely to influence the child's ability to adapt to the new situations, including the classroom or school environment.

Together with a feeling of deep love and compassion that often go hand in hand with feelings of guilt and self-pity, parents stereotypic conception of a handicapped child may lead to overprotection. Such a child may receive more than sufficient attention, but the parents' attitude and behaviour often implies an amount of protection from challenging experiences which may have a limiting effect on the child's opportunities for acquiring independence and mastery of practical tasks as well as social interactions.

Bringing up a handicapped child represents a delicate balance between overprotection on the one side and excessive demands of independence on the other. Western culture today is very preoccupied with fostering independent children, while children with severe disabilities inevitably are more dependent on others than are children without.

Increased dependence due to severe disability should be accepted as part of the handicap and need not prevent trying out all possible routes to optimal independence as an ultimate goal. A handicapped child needs to feel the caregivers' unconditional acceptance as a person, notwithstanding his or her handicap, in order to be able to strive for independence and self-reliance.

Studies of the effect of early intervention with cerebral palsied children in the form of home-based or centre-based programmes (Harris, 1987) and of the effects of early education programmes in segregated or integrated classrooms (Hanson, 1985, Ispa and Matz, 1977) indicate that early intervention and early education programmes may enhance handicapped children's motor and mental development and in important ways support and encourage parents in their role as caregivers and teachers to their children, providing valuable experiences in interaction with peers and teachers as well as constructive use of toys and tools.

While scientists still discuss how to evaluate outcomes of early intervention and

early education programmes, the results of numerous studies available today indicate that early intervention is worthwhile, even with severely handicapped children. Although most handicapped children in developed countries are offered adequate early care and education, this is not the situation in most third world countries.

Even though the authorities in many developing countries recognize the potential developmental benefit for all pre-school children, not just those who are handicapped, which may be available through the implementation of early care and education programmes, it is obvious that the present economic situation in a majority of these countries does not allow the kind of expenditure necessary to secure early education for handicapped pre-school children or children in need of educational support for other reasons.

This means in practical terms that most severely handicapped children in developing countries have probably received very little, if any, assistance in developing their physical and mental abilities, except what parents and other available members of the family may be able to initiate and carry out themselves. When these children enter primary school, the school faces the task of meeting basic needs in the field of personal experiences and learning, which in many developed countries is already taken care of by kindergarten and pre-school programmes.

8. The need for a flexible primary school curriculum

What and how severely handicapped children should be taught when they enter primary school depends at any given moment on the child's physical and mental functioning, previous experience and learning capacity. As all children are different, and handicapped children more so than non- handicapped, individualization of the curriculum is necessary in order to match each child's needs, capabilities and preferred way of learning.

A preconceived, step-by-step, rigid curriculum and a set of prepackaged materials will to many severely handicapped children mean a violation of their right to take an active role in the learning process. In order to be able to programme the curriculum to the changing needs of the children, the teachers have to evaluate the children's progress and way of learning repeatedly so as to adjust their educational efforts to children's changing interests, capabilities and learning style.

In view of the fact that many severely handicapped children do not possess the cognitive skills that traditional schools demand, it is a great challenge to teachers and school administrators to tailor an education programme that meets with the children's level of functioning. This challenge is even greater when taking into

account that many teachers in developing countries face a situation with very few material resources, up to fifty children in a classroom, outdated textbooks, and little experience in teaching children with severe handicaps.

The need for a less formal teaching style, less authoritarian teacher attitude and less focusing on abstract and representational use of language in first grade is probably not only because some children in the classroom are handicapped. According to available reports (Halpern and Meyers, 1985), there is good reason to expect that many children who are not suffering from visible handicaps are nevertheless disadvantaged because of malnutrition, poverty and lack of simulation of the cognitive skills that schools demand.

Many of these children, alongside those with severe handicaps, have not had much active experience with different kinds of materials to explore or experiment with; many have a very concrete language and are not used to describing experiences and feelings or representing experiences through pretending, play, making models, drawings, etc., or to think of how things compare to each other, where things are in space and time, how to use things to make other things happen, etc. which are examples of mental activities central or basic to learning in school.

A change of school characteristics, to make them more compatible with the educational needs of the children they are supposed to serve, will not only make the transition to school easier, more satisfying and meaningful for children in general, but also make the integration of children with special handicaps a way to achieve the ultimate goal of full integration later in adult society.

9. Integrated education - an introduction to the community

Towards integrated education in western countries

After several decades with segregated and institutionalized education for severely handicapped students, most developed countries are today in a transition from segregated care and education towards full integration when possible. While educational services and social support in many countries previously were based on charity, the rights to equal education and social assistance, adjusted to each student's individual needs, are today regulated by law.

Although the situation for severely disabled in general thus has improved over the last decade in most developed countries, there is still a long way to go to reach equal educational opportunities for all handicapped students. The school system is a complex organization and changes often take a very long time, even though equal opportunities in education are mandated by practice.

Teachers' personal attitudes, routines and teaching habits are often very real obstacles to major changes in a school system. Furthermore, changes are often delayed by politicians' reluctance to grant sufficient funds to implement the educational improvements which they themselves have decided. Even though it is still easy to point out many shortcomings regarding educational opportunities for handicapped children in the developed parts of the world, many improvements have taken place.

Handicapped children are today normally educated by teachers who have met public certification standards; funds needed to provide special and often more individualized education are secured in state budgets; school buildings, equipment and educational material are kept in proper condition; transport to and from schools is arranged without parents' efforts and expenses; etc.

The transition from segregated schools to some kind of integrated education has proved however a slow process in many countries. Today one may find a wide variety of attempted integration in different countries. In some places, the school authorities are moving students from physically and socially isolated special schools to schools located in the proximity of normal primary schools, assuming that this will lead to increased social and educational exchange between the two schools and their students.

Another solution has been to place self-contained classes of handicapped students into the elementary school itself, in order to reduce the physical distance of an isolated school building and to make it easier for the handicapped students to become a part of the social milieu of the primary school, while still keeping the possibility of some degree of segregated education for these students.

There is also today a general acceptance of the fact that if we want integration, normal children need the experience of interacting with handicapped children, as much as the other way round.

The most common models of integration for the most severely disabled still seem to be based on an assumption that these students need to be grouped together, or only partially integrated, in order to receive appropriate educational services. This assumption seems, in practical terms, to imply that all severely disabled students have similar educational needs, while the similarities mostly consist of special kinds of physical disabilities or behaviour problems. The educational needs usually call for a very individualized programme.
The traditional assumption that grouping similarly handicapped children in a classroom makes appropriate teaching easier is today challenged by modern educators (Certo, 1983). The notions that homogeneity produces a better learning

environment, that cost effectiveness is improved by serving a low-incidence population at one school site, that it is easier to make special treatments available when the students are concentrated in one school, etc., are today met by a series of well-founded arguments.

A few of the most important arguments against homogeneity are: segregated educational services deprive disabled children from learning through relationships with normal peers; it is often more difficult to manage the problems related to several handicapped students in one classroom - for example behavioural problems, lifting, feeding and carrying severely motor disabled, etc., and at the same time be able to teach in an efficient way; cost effectiveness is not necessarily improved in special schools; modern schools already have only one floor and can easily be made accessible for and adjusted to the needs of even the most severely handicapped students; and segregated education may lead to a very shortsighted educational approach, that first of all deprives the students from making experiences which are relevant to life in the community outside the school.

Although many severely disabled students, for example students with severe cerebral palsy, often need help to perform practical tasks, the educational approach may turn out to become an educational problem when all, or most, obstacles relating to daily life are removed in a streamlined, segregated setting.

When streamlining programmes goes too far and does not leave the students any opportunities to respond independently to difficulties, or at least partially participate in meeting their personal needs, they are at risk of not learning the basic responses for routine tasks. It is thus less likely that the children will develop a personal ambition to overcome the same difficulties when exposed to them in other situations, either by learning to compensate for missing skills or to request assistance in an appropriate way only when absolutely necessary.

Teaching severely disabled children in an integrated classroom allows the students to observe how more able-bodied peers carry out their schoolwork and solve social and practical problems. Although there is a need for an adjusted curriculum and demands on practical skills, interaction with normal peers may become an important motivational push to try to become more independent and to make an effort to learn social and practical skills. In spite of all good educational and humanistic intentions embedded in the traditions of segregated education, there is also a great risk that general over-protection may lead to increased, learned dependence.

If state schools are supposed to prepare handicapped children, as far as possible, for the task of leading an integrated and independent life in an adult society, it is

necessary to provide the opportunities to learn how to cope in that society. In addition to learn basic academic skills, such as reading and writing, it is also necessary to learn normal social conduct and the general rules of social interaction in the community, to communicate, to be able to move around, to cook, to use transportation facilities, etc.

In order to achieve the goal of full integration of severely handicapped people in a society, it is necessary to recognize the importance of normalized performance standards, to analyse what normal performances implies for skills and to determine how these skills could possibly be learned or compensated for.

In general the goal of teaching is twofold, on one hand to teach disabled children how to live with a disability and thus preventing it, if possible, from becoming a handicap; on the other hand to teach normal children what it means to a person to be handicapped. To be able to assist severely handicapped children in using their potential developmental resources, it is necessary not to focus too much on disabilities, but rather on how to learn relevant skills.

In order to prevent disabilities from becoming handicapping conditions in a society, it is necessary for teachers as well as parents to be creative, realistic, persistent and understanding. This is important to give the necessary backing to students in their struggle for mastery of skills, not just skills that are developmentally but also, as far as possible, age appropriate and socially acceptable, in the school as well as in the surrounding community.

Some guidelines for integrated education

There are different views on what important characteristics of modern educational services are for handicapped.

Certo has summarized some minimum standards from different sources, which deserve serious consideration.

The principal of equal rights to all students to grow up and be educated in the least restricted and segregated environment possible determines that:

> 'Severely impaired students should, whenever possible, be geographically as well as educationally integrated in ordinary classes with general elementary and secondary schools.' (Certo, 1983).

When severity of impairment precludes full integration in the ordinary classroom, students should, whenever possible, have their social and educational basis in the ordinary classroom, and get auxiliary and remedial teaching outside the classroom - individually or in groups.

Severely handicapped students should be educated in self-contained classes within general elementary and secondary schools, with accompanying planned systematic contact with non-handicapped peers. Certo adds the following points:

> 'The educational convenience of students should be given priority over administrative inconvenience in service-system decisions.
>
> 'Instruction should be organized to program consciously for independence.
>
> 'Individual educational plans should be jointly developed by parents and educators to reflect the needs of students to function in a variety of current and subsequent integrated school or community environments.
>
> 'Instructional contents should be referenced against functional, age-appropriate skills required for performance in integrated environments selected from at least the following domains: domestic living, vocational stores/services, transportation/mobility, and leisure.
>
> 'Regardless of presumed physical, sensory, or cognitive deficits, students should be taught, through skill adaptions when necessary, to participate at least partially in integrated environments.
>
> 'Interpersonal interaction instruction should assure that students interact realistically with other individuals in integrated settings.
>
> 'Community-related functional skills should be systematically trained in community environments, with the amount of training time increasing with chronological age.' (Certo, 1983).

The above criteria should not be regarded as complete. Different social and cultural contexts may certainly make it necessary to add others. The items listed above do reflect however, some of the most important experiences derived from implementing educational services for severely disabled students in western countries, and could probably serve as guidelines for school authorities in countries that are now in the process of developing educational opportunities for this group of students.

It is to be hoped that developing countries will learn from the mistakes made by the so-called developed countries in setting up institutions and segregated schools for severely handicapped children, which many countries now are struggling to phase out. By avoiding the detour of setting up expensive segregated schools for severely handicapped, unnecessary cost could be saved; and even more importantly, derived thereof educational practices have often proved to have the side effects of alienating and isolating handicapped students in the society, instead of preparing them for an integrated life, and thus do not deserve to be copied.

COMMUNICATION AND STRUCTURED TOTAL COMMUNICATION

Miriam Donath Skjørten

INTRODUCTION

The human baby is born social with a directiveness, or a certain quality of attention, towards his care taker. The baby is also dependent upon this care taker for food and touch.

It is, however, important to realize that the baby, from the very beginning, takes initiative for interaction. He does this when the need arises, when he is hungry or uncomfortable in any other way. He does this without having learned it. At first he will do it as a result of a reflex action. The care taker responds and answers to the baby's needs. The baby's action bear fruits. Not only does he, after a while, realize that through actions he can influence surroundings, he also learns something about his own importance and value for these surroundings.

One can say that the baby's discomfort (e.g. hunger) will:

- Cause him to take initiative and act,
- Get a response that will make him comfortable again,
- This response will in addition give him other pleasant experiences like cuddling, smelling, hearing pleasant voices, etc.
- All this social response will start building up the baby's self esteem.

Gradually this will develop into a more conscious social interaction, which will grow into communication. Interaction and communication are basic for development and learning.

It is important to notice that the response the baby receives from surroundings will depend considerably upon the baby's own quality and quantity of initiative and action. In other words, the baby and the care taker will both from the very start have influence upon their interaction. Through interaction, they get to know each other's reactions and temperament, and mutuality and attachment will develop. In other words, they will get to know and trust each other.

During this process, the child will also gradually start using the codes of communication he meets. Learning and using these codes will require imitation.

Babies will develop controlled imitation after having experienced interaction, because interaction will also include the care taker's imitation of the baby's expressive behaviour. One cannot merely ask the child to imitate without the child having experienced to be imitated.

Children with CP will often lack most of the above- mentioned experiences. Because of their handicap, they will not have enough, if any, self-initiated experience of: interaction on the basis of mutuality, taking initiative that is being responded to, manipulating the physical world or communication.

Communication

> Communication means first of all to share. We share and interchange feelings, thoughts, opinions or information by sets of codes and symbols that all partners can understand and handle.

When receiving formal education (kindergarten or school), children with CP are very often taught techniques of communication without having experienced interaction, mutuality and the basic element of communication.

Because of their handicap these children have not manipulated the physical world and therefore they know very little about it. Knowing little about the world will make it difficult for them to make choices. Knowing little about the world and communicating poorly will deprive these children of having influence on their situation.

Teaching techniques without knowing the process of communication may result in: the child not learning the techniques; or even if he learns some of the techniques, the child will not really be able to use them and therefore will not be motivated to make the effort of learning them; the child may be able to use them in certain situations, but not spontaneously.

What a frustration for the children, their parents and their teachers!

The conclusion must be that when starting to teach these children, no matter how late one may start, the teacher (sometimes the care taker) will have to first observe and assess the child's communicative manner and mastery; observe and assess the situations in which the child communicates best, or may best be able to establish communications; then try to establish interaction with the child and building up the fundamentals of the process of communication; and only then teach the child some codes.

The ideas, techniques and methods one can apply are based on what sometimes is called **Structured Total Communication.**

BACKGROUND

Structured total communication has arisen from working with congenitally deaf-blind children and has also been called education for for the deaf-blind. It has been shown, however, that this kind of education is also important when working with children with other serious functional disabilities and that the principles can be used, and are used, in all education.

In structured total communication, philosophy and action are completely inseparable.

This is education in the widest meaning of the term. The first concern is to establish mutuality. Mutuality will require, among other things, the establishment of action and initiative. It will require an understanding of the world we live in. It will require the establishment of codes. In other words, it will require the development of a 'culture'.

This is a question of a way of being together and doing things together based on mutuality with children (youth or adults) with serious compound functional disabilities. These compound functional disabilities are of a kind which make it difficult to establish mutuality.

The difficulties arise because the child's perceptual and/or motor disturbances tend to confuse the person(s) giving the care. The child represents an unknown 'culture'. The care person experiences cultural inhibitions, for example, in translation, timing, direction of focus and in the choice of codes.

Structured total communication is a systematic and individually adapted procedure for establishing mutuality and all that this implies.

Structured total communication is a deliberate procedure based on our knowledge of the establishment of mutuality and communication with the newly born child.

The objective is to preserve the quality of this mutuality as we experience it among normally developed children, in spite of having to change elements such as time, direction, number of repetitions and channels of communication.

FUNDAMENTAL PRINCIPLES

The 'complete' child is more than the sum of all its functions

Whenever we plan the child's programme, which will include single activities, timetable, quality and quantity of learning and training, aids, body-position, etc., we must take into consideration the whole child, including what the child masters and is interested in. We must consider the integration of the child's physical, social, emotional and intellectual functions and needs.

This will require, among other things, mutuality involving cross-disciplinary co-operation, and taking into consideration the child's daily rhythm, past and future.

Planning for life

The present, the past and the future are all important for what we do with the child and how we do it. We must know as much as possible about the child's life situation. We must not waste their communicative effort on what for them are meaningless activities.

It will also be important to take into consideration the child's future practical and social possibilities in order to be able to give the child a meaningful education. This consideration must not develop into a limitation on education, but rather the contrary.

Meaningful education together with maturation have great impact on development!

All people have a right to communication based on the channels of communication most accessible to them

For years one had the attitude that the only respectable way to communicate was verbal language; spoken and written. Experience has shown us otherwise. Many people, professionals as well as laymen, had the attitude that if a child learned another way of communication other than speech, this will inhibit the development of speech. Experience has shown otherwise.

Interaction and the development of thinking do not depend upon verbal language.

On the contrary, other ways of communication will help the child to experience, understand and practise communication, and give enough confidence and motivation to start talking, if these possibilities are present.

All people have a right to receive help to develop those channels of communication which will give them the most suitable form of communication.

We must realize that the most accessible channels for establishment of communication will not always be the best one for the child in the long run. Therefore one may wish to start through one channel and later help develop others.

Children and adults - pupils and teachers - both are parts of a DIALOGUE and a TRANSACTIONAL RELATIONSHIP. This must also be true for children with handicap.

The following must be considered:

- Both are influenced by the **culture** in which they find themselves. Culture will include not only the culture of a nation, region or ethnic group, but will also include what is specific for the behaviour of communication in a certain village, school and, most important, a family.
- There will also be traces left by the culture in which they found themselves in the past
- Both influence each other over time.
- Both affect the premises for their interaction.
- Both affect the relationship between them.
- Both are the object and the subject in turn. In a transactional relationship where every one takes initiative, every one will influence and be influenced; therefore, one will change constantly between being an object (being influenced) and being a subject (influencing).
- Both influence the present.
- Both affect their own and other's future development.
- Both take initiative for action, interaction and communication.
- Both are dependent on the other's response.

The above refers to dynamic relations, based on dialectics, dialogue and transactional models in contrast to mechanical relations based on administration of information and training.

In a relationship of interaction where one partner possesses a greater framework of understanding and a better developed framework of reference for communication, he/she will put a meaning to other's action.

What is happening in such a relation is that the care taker or teacher will translate, interpret and/or over-interpret the child's actions. These action may be as subtle as pointing with a look, moving a finger, changes in breath, etc.

translate:	translate what has been expressed from one form of expression to another, e.g. translate what has been said from one language to another.
interpret:	give a meaning to an expression or activity which can reasonably be assumed to have been intended.
over-interpret:	put a meaning to an action which it is unlikely the other person meant to express by the action.

Translation, interpretation and over-interpretation can only take place within a framework of reference which is culture-dependent, connected to action and connected to or associated with experiences and situations which one has experienced before.

One should try to achieve mutuality when translating and interpreting one's own and other's actions. The proper conditions must be arranged for this to take place.

Such conditions will usually involve structuration.

STRUCTURE

Structure will first of all be necessary in order to find codes for the culture that can be developed between the child and the adult.

When the child uses its channels of communication in a way that is unfamiliar to the adult, structure will be primarily necessary to give the adult an opportunity to reorientate himself.

Structure will help the ADULT and

- Provide the framework and clues which the adult needs in order to understand the meaning of the child's actions and communicative behaviour.
- Help the adult to make an over-interpretation which is as probable and logical as possible.
- Provide the framework and clues which the child needs in order to be able to understand the meaning of the adult's actions and communicative behaviour.

It is important for the adult to be understood by the child. The adult also needs to experience interaction and mastery.

Structue will make it easier for the CHILD to

- Understand the world - the physical and social world in which he lives
- Recognize co-actors, places, actions and situations
- Have expectations
- Take the initiative for action, interaction and communication
- Understand and interpret signals, symbols, actions and language

Structure will help both the adult and the child to obtain an overview, to understand and to interact.

But, if structure becomes a goal in itself, this may obstruct spontaneous communication and associated thought.

The goal of structuring

It will usually be necessary to place activities into a structure to make it possible for the adult to:

- obtain an overview and thus make it easier to detect the child's signals
- allow translation, interpretation and over-interpretation of the child's signals
- obtain better knowledge of what the child enjoys and what he does not enjoy
- improve the possibilities for observation and for planning; be able to use herself/himself in spontaneous interaction
- acquire security, because it is easier to feel that one is doing something worthwhile.

It will usually be necessary to place activities into a structure in order to make it possible for the child to: obtain an overview of his life, acquire expectation, understand the world in which he lives, be understood, experience that it is meaningful to take the initiative for action and experience that it 'pays' to make an effort in order to act and communicate.

It is of vital importance that structure does not overshadow the child's initiative, expectation, association and inventiveness.

WHAT AND HOW CAN WE STRUCTURE

We can structure the child's activities and timetable. We want to give the child an overview of each individual activity, of the day, and gradually of the week (later the month, season, etc.). We want to give children an overview of their various social

contacts of the specific world in which they live.

Therefore, as early as possible, we must structure in relation to PERSON, PLACE, ORDER/SEQUENCE, TIME AND SPACE.

1. Person

Attachment to specific persons and thus the establishment of meaningful social relationships will provide a basis for communication and therefore for learning. This will be impossible for the children to achieve unless they are able to differentiate one person from another. The following may be important in this connection.

Each person having more or less permanent contact with the child should have a distinguishing mark or sign fitting one of this person's distinct characteristics. This characteristic must be found, chosen and marked by a sign or symbol by the child together with the adult during a process of interaction over a period of time.

One should 'discover' together with the child the factor that is specific for the child's co-actor as regards: DYNAMICS OF MOVEMENT, VOICE, BODY ODOR, TEXTURE OF SKIN, APPEARANCE AND OTHER SPECIAL CHARACTERISTICS SUCH AS SPECTACLES, A CLEFT CHIN, JEWELRY, etc.

The same person should be together with the child for a specific activity. Preferably one person should be together with the child for several activities.

It will be important for the child (irrespective of age) to be able first to establish a special relationship to a very limited number of essential persons. Later the child will be able to transfer the ability to interact, recognize and remember a greater number of people. At the same time, the child will be able to establish meaningful social relations with several people.

It will be important for the adult if he/she establishes a special relationship with one of the children of the group. This will give the adult an opportunity to become better acquainted with the child's signals and comprehension, and thus make communication easier for both of them.

2. Place

The child can learn to recognize and differentiate between places (and thus between activities and people) by:

carrying out specific activities in specific rooms or in specific places in a room; being shown that places can be different as regards floor covering, lighting, sound, noise and resonance, smell, temperature and air movements (breeze); and
by being made aware of objects that are special to specific places; and
by being made aware of special signs on the way to or outside specific places.

3. Order - sequence

It will be necessary to help the child to receive an overview of the different actions and their sequence in a single activity as well of what it may expect will happen during a day, a week or a longer period of time.

This overview will create expectations in the child, sometimes something to look forward to, sometimes the opposite.

This section focuses on scheduling periods of time (such as a day or week), but the same principles can be applied to to a single activity.

The child's timetable and plan for the day (and possibly each activity) will be presented through signals, symbols or words which represent the activities which the child is to carry out.

These signals and symbols will usually be three-dimensional or two-dimensional. The timetable must be presented in the form which is most accessible for the child. A 'day-box' is often used in which these signals are placed or a 'day-board' on which they can be hung.

The 'day-box' is gone through at the start of the day with the help of the objects, drawings, photographs and /or word pictures, sounds, speech and signs (specially made for the child, taken from sign language for the deaf or the deaf-blind).

The purpose is to use the senses most available to the child in order to give the child information, information which is not easily available to the child may cause confusion. The quality of the information is more important than the quantity.

When the child has little knowledge and a poor overview of the world in which he lives, it will be best to prepare a timetable where the signals or symbols for the activities are as concrete as possible and are placed in separate boxes representing

the limits of the activities in space and time. We can call this time table a 'day-box'.

How to use a 'day-box'

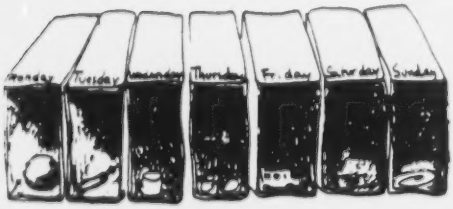
- The first thing to do is to go through the timetable for the day. When an activity is started, the signal or symbols for this activity is taken to the place where the activity is going on.
- When the activity is completed the object is placed in a large box, in which all the objects (signals or symbols) for the activities that have been carried out are gradually collected.
- These will be used again to sum up what has been done on that day.

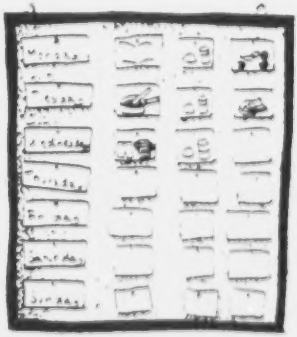
In this way, the child is also made aware of gradually increasing number of empty boxes.

There should be one activity which is particular for each day of the week.

The term 'day-box' is used figuratively. Different objects and materials can be used. The important thing is that the material is available to the child in terms of the child's perception and ability to abstract.

EXAMPLES OF 'DAY BOXES' - SCHEDULES





4. Time

Time will be closely related to order and sequence and will often be part of it, but must also be considered separately.

Important elements of time are:

- Duration
  - Duration of different parts of an activity
  - Duration of the activity as a whole
- The time of the day
  - In relation to daily rhythm,
  - A specific day in relation to a weekly and /or monthly rhythm
  - A day in relation to the time of the year - season

The child can acquire experience and understanding for the element of time, for example, through:

- Experience
- Having a fixed duration for certain activities
- Arranging specific activities at specific times of the day
- Arranging a special activity, or a few special activities on a particular day of the week
- Arranging activities which are special for the different seasons of the year. Some countries will not have marked seasons; it may then be important to find another time element in nature to relate to.

5. Space

An understanding of space is connected to experiencing, understanding, differentiating and relating something that is two or three-dimensional. This will also include understanding distance, direction, size, shape, firmness and hollowness.

An understanding of space, objectively and subjectively, is a necessary factor for understanding the world in which we live.

It seems as though as understanding of space can be acquired through being able to point at and give a name to objects, their size and shape. But if a child is unable to relate this knowledge to his own body, he will not develop adequate inner or subjectively applicable understanding of space. In this case, the child will not be able to transfer to an adequate degree the understanding he acquires.

Personal space - functional and potential

- Personal space is the space around the body. It is private. When ever you go into it you should be asking for permission by "knocking on the door"
- Functional personal space is as large as a person is capable of stretching.
- Potential personal space is as large as a person could reach with a maximum stretch of all his limbs. These are the limits for the respect one should show.

We all know that children with CP will need a lot of physical help. The problem is not in having to manipulate the child's body for changing body position, feeding or changing clothes. The question is how you approach the child, and how you prepare the child for what is going to happen.

- Awareness of its functional and potential personal space is of utmost importance for the child' development of:
  - Self-image
  - Independence
  - Differentiation between self and the rest of the world and
  - Care for own integrity - autonomy
  - Localization of self in the world in which he lives.

Our respect for the child's personal space will be the first step in our effort to teach the child to be able to take care of himself.

General space

General space is the space we move in. Personal space will always be around us while we move through the general space.

Children with movement difficulties will have to receive help in order to experience general space and develop an understanding of it.

- If the child is to feel more secure he must constantly be made aware of the generally existing space by moving around in it and/or by being moved through it.
- To move directly and indirectly (with "detours") to a specific goal will be important as regards different degrees of purposefulness and determination, and will also have a communicative effect.
  - Moving directly from one place to another in space can give security
  - Moving indirectly from one place to another in space can stimulate exploratory activity.
- It is important to connect activities and communication by means of different directions and different levels. Directions and levels must be

experienced in relation to

- Own body
- The body's position and location in space
- Positions of objects and
- Relation between the body and relevant objects

Activities which can be logically connected to an understanding of space - of high and low, in front and behind, the one side and the other side (right and left) - will help to extend the child's concept of the world in which he lives.
Understanding of space with regards to size is part of understanding the world. Movement and objects can take up more or less space. There is, for instance, the difference between

- Natural size and size relations as they can be presented, for example, through toys and picture books
- Sizes in relation to the size of one's own body
- Size in relation to each other

COMMUNICATION AND DEVELOPMENT

1. Structured and free and spontaneous communication

- It is important to distinguish between communication within the framework of an activity and spontaneous communication - structured and free communication.
- It is important to teach the child to understand and use codes.
  Training in this will usually take place within the framework of an activity or in specific surroundings.
- But it is also important to take care of and/or awake the child's initiative to spontaneous communication.
  Therefore it is just as important to be able to show the sensitivity and flexibility necessary to be able to meet the child's initiative and attempts at spontaneous communication, and to respond if the framework is broken.

2. Mutuality and communication

Mutuality, in the meaning of the term as used here, will include attachment at the social, emotional and intellectual levels. Mutuality will be in constant development. Mutuality must constantly be maintained, renewed and extend. This may happen through interaction and communication.

When mutuality starts developing between a child and his care taker, togetherness

will be sufficient. Gradually mutuality will extend to involve objects and activities. One will use and introduce:

- Familiar and new actions and
- Familiar and new activities
- Familiar and new objects (toys, books, objects for every day living)
- Familiar and new concepts (concrete as well as abstract like feelings, state of mind)

3. Some important questions and considerations

What shall we communicate about?

What concepts should the child learn?

These two questions must be answered in collaboration with the child through:

- Observation
- Assessment
- Interpretation of the child's interests and motivation
- The care taker's own motivation and evaluation

The assessment must, among other thing, take into account the following:

a. about the child

- What the child can do
- What the child has to learn in order to achieve best possible control over his own situation
- What the child is capable of mastering
- What the child is interested in
- What the child has to learn to make it easier for the adult to interact with the child

b. about the adult

- What the adult has to learn
- What the adult has to see
- What the adult has to perceive
- What the adult has to express to make it easier for the child to interact with adult
- What is the adult's and what is the child's responsibility within their interaction
- What, though difficult, should be changed in the adult's behaviour .

4. Some more important questions

Are the child's and the adult's interests the same?

If not, is it possible to take care of the interests of both of them?

If this can be done, how can it be done?

If this cannot be done, what does one then do?

5. Finally

It is important to provide conditions which will give the child an opportunity to acquire necessary experiences.

It is important to provide conditions which will give the adult the opportunity to receive what the child has to give.

It is important that the adult try to communicate to him/herself and to the child the following, among other things:

- What does the adult think the child is experiencing?
- What does the adult experience when the child experiences what it does?

THE ANSWERS MAY ONLY BE FOUND BY LISTENING TO THE CHILD AND YOURSELF WITH EVERY ONE OF YOUR SENSES!

COPING WITH COMMON LEARNING DISABILITIES IN CHILDREN WITH CEREBRAL PALSY

Gerd Gylder Corneliussen, Marit Lund, Elsbet Nilsen

EDUCATIONAL PRINCIPLES

It will always be important to remember that children with handicap are first of all children. They have the same needs as all other children do. They must, among others, get the opportunity to establish closeness, interaction and communication with others, to establish self-confidence, and to receive encouragement and guidance for development and learning. Many children with handicap will however need special attention, help and aid in order to have these needs fulfilled.

Children with CP are no exception. They may experience a number of problems concerning function and learning which are organically conditioned. It is essential that the child's teacher possesses a certain knowledge about this, in order to adjust his teaching in the best way possible for the child.

1. Individual concerns

The ideal of education for all children is to base the teaching on the individual pupil. Optimal learning may be achieved if each and every pupil has his/her own arrangement based on individual premises. This is obviously impossible to achieve in real life. Large classes is the norm when children with cerebral palsy are integrated in ordinary schools and the teacher must prepare for a high degree of co-education.

Severely disabled children are in need of a different situation for learning. In many instances they are totally dependent on individual assistance; in addition to co-education in large classes demand teaching in smaller, specialized groups.

Assistance may in practical terms mean help to get his/her books out of the satchel or bag, get out of the classroom during breaks and in again afterward, visit the toilet, etc.

Pedagogically, the disabled pupil might need a slower rate of progression than others, special material, extra explanations, etc. How all this is organized at the individual school, depends on available resources and the flexibility of the education system.

2. Accepting the child's functioning level

All children are different, but the majority of normal children have the possibility to make use of co-education for their own development. Most of them have the ability to accept challenges, work hard and long to master a field in which they are weak and little by little achieve increased proficiency. The teacher may therefore make demands on the pupil to increase his/her efforts to master the weaker subjects.

This principle should not be transferred indiscriminately to special education. Learning and mastering are of course the goals for the disabled pupil too, but the process of getting there has to be modified and may in many cases take more time.

In special education, the teacher must to a much greater extent base teaching on each child's particular resources, both mental and physical. A plan or strategy for each child must be prepared, based on a detailed assessment of the child's:

- Communicative form and abilities
- Emotional status
- Mental level
- Possible learning difficulties and
- Physical premises.

Most children with brain damage have varying degrees of handicap in arms, legs, face and other body parts. The mental abilities may also vary from child to child. Some children may also have mild or severe sensory dysfunctions.

It is important for these children, as it is for all children, to use as many senses and body parts as possible. To achieve this, co-operation with different professionals, especially physio and occupational therapists, will provide the best possible foundation for working with these children.

All children learn through all their senses and through the manipulation of the world they are surrounded by. It is therefore particularly important in elementary teaching to employ as many senses as possible in order to provide the child with the best and widest experiences and references possible. The child must learn to look, listen, touch and feel the objects which supply meaning and sense to various concepts. If possible, the child should also handle these objects, or at least watch others handling them.

Sensory ability and motor skill may vary in different situations and under different conditions. A child's vision may be at its best in certain sectors or at a particular distance from the eye. Its hearing may function at its best within a certain frequency range, and it may have better tactile abilities on the cheek than on the hand.

The teacher will often have to find compensations for the child's poor functions. A child who is unable to shape readable letters due to great directional and/or motor problems should be allowed to use letter stamps instead. This may improve the child's written work in both quality and quantity and will therefore permit the child to utilize his resources more fully.

Children with cerebral palsy are different. This difference often leads to problems with achieving the same academic levels as their classmates. They may also suffer under the extra pressure of actually being different. This is where the teacher's main task lies. If he can accept the disabled pupil as he/she really is, respect his uniqueness, highlight his/her resources instead of the weaknesses, well, then he most certainly will be able to offer the child unique possibilities to learn and develop.

3. Helping children to help themselves

A disabled child is dependent on others helping him right from the start. Help to accomplish everything, from the most basic and simple natural functions, to playing, learning, and yes, living. Some maintain their independence, asserting their need to function actively in spite of their disabilities, while others - maybe most - resign themselves to the fact that they perhaps never will be able to take an individual initiative. They fall into the trap of accepting that others do things for them, becoming all the more dependent on their environment, maybe even more than necessary.

As teachers, our duty is clear. The main goal of all education is, and must be, to prepare the pupil for an independent life as far as possible. Time passes very quickly; soon the child is no longer a pupil, but an adult human being, who must live his or her own life, whether he/she likes it or not. When that time comes, a series of skills is needed, both practical and theoretical, if they are going to have the slightest chance of living a full life in today's society. What a pity, if they during their learning have not been prepared for that. Much of what traditionally has been regarded as standard curriculum in our schools serves to steal valuable time from the severely disabled; time which should have been spent training and preparing them for an adult life.

PRINCIPLES FOR SPECIAL EDUCATION

1. How to overcome concentration problems

Removal of distracting elements in education.

Brain-damaged children are often more easily distracted than other children. A car or even an animal passing the classroom/area is far more interesting than any exciting activity on the desk or in the classroom. Sounds or noises inside or outside the classroom will immediately attract attention. Busy fingers or eyes will find any object or material left on the desk not in use at the moment.

When working with specific tasks, the desk must be cleared and made ready for each new activity, leaving only the bare necessities in sight. If, on the other hand, you want the child to become aware of and experiment with his physical surroundings many different objects should be reachable. It is therefore necessary to find the best situation for each child.

Many children with CP are so preoccupied with details that they lose track of the overall picture. This phenomenon manifests itself in many ways; a child may read something and just remember isolated fragments, completely missing the general meaning of the text; or he may look at a picture and note that the shadow from the tree resembles a bird, not seeing that the picture itself is a landscape.

In many children with brain damage optimal learning is dependent on the teacher being able to screen the pupil from external impressions which may distract and disturb the child. Such disturbances may be purely local, in the classroom.

Such problems need not have anything to do with intelligence, and much can be remedied by simple means.

Structuring through room arrangement, routines, schedules and defined tasks

A structured daily rhythm will not necessarily appear dull to the pupil with concentration problems.The child may feel secure, knowing exactly what is going to happen at all times. However, there must always be place for the child to take initiative for unplanned activities.

Similarly, he/she may enjoy getting short, clearly defined exercises or tasks, particularly where the result is immediately apparent. One arithmetic problem at a time, written on an individual card, may be much more inspiring, than having to face an entire mathematics book full of problems. This may also constitute a much

more effective learning.

To prevent a brain-damaged child from constantly turning around to observe what is going on in the classroom, it may be a good idea to place that child at the back of the room. However, in classes with many pupils, the child should be placed as close to the teacher as possible, unless he has his own special tutor or assistant.

In classrooms with windows, the child should be placed with the back to the window. This may prevent the distractions by what is going on out side. It will also prevent the child being dazzled from the light.

Some pupils function well only in small groups where there is a minimum of distractions. During some activities the brain-damaged child needs the full attention of its own teacher.

2. Teaching based on the pupil's level of development

Ensure the child understands

Visual and other experiences are often difficult to combine into something which is meaningful to the child. Serious consideration must be given to the presentation of tasks and exercises to ensure that the real meaning emerges, giving the pupil a clear and unmistakable understanding of what the exercise is all about. This may, for instance, include checking that the child understands the words describing the task or exercise.

Textbooks and educational aids must be adapted to present the child with an entire concept and not only a collection of circumstantial details with no apparent connection and meaning.

Adjust progression

A gradual progression of the teaching will always be important to children with brain damages. The same applies to the tempo, which must be adapted to the child's abilities. Progressing to the next level of the teaching before the child is ready, before he masters the basic knowledge on which the next step of the education is based, gives little or no educational effect. In most cases it is not sufficient to tell a child how a task or a problem should be attacked. The child will achieve better results if you first do the task or exercise together with the child. When the child is ready you gradually leave him to perform the task without help.

The child must learn every single step of the process through participation. The teacher must be absolutely certain that the child understands the concepts being used, and the correct sequence of events leading to the fulfillment of the task or

exercise.

Adjust speed

Some pupils may experience a need to slow down in order to take a closer look at the exercise one is presently dealing with. Hyper-activity and lack of concentration may make it nearly impossible for some children to complete an exercise. This will even be more difficult, when you rush the child. By attempting to slow the tempo and give support throughout an activity, the pupils will frequently be able to solve problems according their capabilities.

The tempo of the teaching must not exceed the capacity of the pupil. It is very important to monitor closely the pupil's ability to receive learning at all times.

3. The pupil's need to succeed and experience mastery

Any child will need to feel that he has succeeded in carrying out the task he has been given. Especially important is this for children with CP. If their needs are not assessed and heeded properly, they will often experience a feeling of inadequacy in many of the daily tasks, and in their schoolwork.

The feeling of being losers may develop very quickly in children, if they throughout the entire schoolday are left struggling with tasks they fail to master, and if they are not given the proper practical assistance required. A sense of defeat will often lead to an emotional blockage of all learning and succeeding in tasks they mastered previously.
By changing the teaching strategy and by being more attentive to the child, such blockages may in the long run be broken down. To accomplish this, the teacher must respond positively to the efforts being made by the child The teacher must improve contact with with the child and talk about how the child experiences his own situation. A very important factor is to make the teaching enjoyable, meaningful for the child and closely related to the child's environment.

Some children will get great satisfaction from monitoring their own progress, even if it is very small. It may be an idea to use some time to summarize the progress of each child together with him. By emphasizing the positive, there may also be an opportunity to discuss subjects or areas where greater effort or more work is needed for the coming period. These evaluation periods should be relatively short, and the summing up must not appear to be an examination which the pupil will have to pass. It is important that the child regards this as sign of progress.

A praiseworthy achievement may be anything from remembering a message from one day to the next, to mastering the intricacies of the multiplication table. It can

be moving a toy to putting food into his mouth.

Strengthening the weak sides

The general educational approach will be to start working with and ensure the optimal use of the child's strong functions. The child will, however, achieve even better general development if he also trains and learns to compensate for his weaknesses. If the child experiences problems in relating to his own body, activities to enhance this should be pursued, e.g.:

- Playtime activities focusing on the body,
- Songs and dances with body movements,
- Development of corporal awareness by touching his own body and the bodies of others,
- Copying postures, positions and movements.

Repetition of activities

Repetition of already acquired skills are important to all children, but even more so to children with brain damage. In order to maintain skills, combine them and develop mastery of new activities, frequent repetitions are essential. Acquired skills are soon forgotten if they are not connected to things or actions the child already knows and appreciates. To facilitate the learning process, it is essential to connect skills to daily routines.

With some pupils you may find yourself working on the same tasks for very long periods of time, without the child showing any apparent comprehension or progress. In such cases, the teacher must re-evaluate the tasks or exercises and see if these really are relevant to the child. The tasks may be too theoretical, calculations too demanding or the use of words may not yet have been acquired by the pupil. Maybe there are some aids which the pupil can utilize in order to progress, or maybe the tasks could be adjusted to more practical demands of everyday life.

Aids

We have to put the child into positions and provide aids and substitutes that will enable the child to master the tasks presented. If e.g. a child's hand motor is very poor, alternative use of other parts of the body must be considered:

- A pointer can be attached to a helmet, or a mouth stick may be used, if the child's head control is adequate or good.
- One or a few fingers may be used for pointing within a small area, provided the hand is stabilized with splints or weighted cuffs.
- Educational material can be reduced in size, enabling the child to reach a larger number of words or pictures without moving the arm.
- Educational material can be enlarged, or words and pictures moved further

apart to facilitate pointing (should the child suffer from exaggerated involuntary movements).

- Boxes with multiple compartments, in which objects, pictures or words can be placed. Such aids may greatly facilitate pointing at the correct word.
- Small, metallic objects (e.g. paper clips) can be fastened to word pictures, numbers or objects, enabling the pupil to lift them with the aid of a magnet attached to the hand or other parts of the body. The best possible working posture will greatly enhance the functions.

If hands or other parts of the body are unable to do the job, looks or mimicry may be used for directing the parents, teacher or other pupils to pick up the object the child wants to handle.

Good and bad days

Brain-damaged children have obviously both good and bad days, and that fact must be taken into consideration during the planning of the education. If the child is put under pressure to receive learning beyond his capacity for a prolonged period of time, the entire learning situation can be regarded as tedious, and thus negative to the child. This may soon result in negative reactions to all forms of teaching, including exercises and tasks which previously were regarded as positive and interesting. Interest, motivation and a positive frame of mind towards the teacher and the learning situation are very important in order to achieve optimal results from the effort.

SPECIFIC EDUCATIONAL PROBLEMS

1. Motor skills

Problems with motor skills

Physically handicapped children experience difficulties in school due to the problems they have with their motor skills.

Clumsiness, spasms and involuntary movements will affect all functions including basic functions of communication. This, in itself may reduce the self-esteem and the emotional and social confidence of these children.

It may be difficult to find the best functional position/s (lying, sitting or standing) for each individual child fitting each single activity.

They often have a reduced function in the motor skills of their hands. The rate of their work will therefore normally be much slower than that of their

contemporaries. Just gripping a pencil or another writing utensil can be extremely difficult, and the all skills demanding hand movements will suffer due to clumsiness, spasms or involuntary movements.

Many of these problems may be solved by employing simple aids in the education. The teacher should regard it as a challenge to plan everything in such a way as to minimize these external obstacles. If this is done, the child will have a chance of developing his/her own resources.

To reduce the impact of motor skills problems

- It is important to find the best possible working position for the pupil.
  - Whether the best position is sitting lying or standing the child must be comfortable and secure.
  - Stools should preferably be adjustable.
  - If the child uses a wheelchair he/she should preferably not be in it when working. This is to prevent a wrong posture.
- Sitting or standing there should always be a work table connected to the chair or standing rack.
- Rubber mats may be placed both on the chair and on the desk to prevent the pupil from slipping, and things from sliding and falling to the floor.
- Writing utensils should be solid and heavy to create stability.

2. Communication

See chapters II and IV.

3. Experiences

Limited experiences

Disabled children are not as physically active as other children, thereby missing opportunities to gather as much natural experience and background knowledge. They are more dependent on assistance and usually spend their time in sheltered environments. This of course robs them of the exciting and natural fact-finding experience of exploring their own body, the close social and physical environment and their social and physical neighbourhood.

In school these limitations are noticeable in many ways. They may lack the knowledge of basic concepts concerning:

- Space, which will include:
  - size
  - shape
  - distance

  - direction
  - place
- Time, which will include
  - duration
  - rhythm
  - speed
  - intensity (force)
- Colours
- Texture
- Quantity
  - as in practical use of money

The disabled child will thus constantly meet unfamiliar areas, which in turn may prevent further learning unless the school introduces special measures.

Filling in the missing experiences

Many children with CP have very limited concepts of things which are taken for granted by other children. These may be concepts relating to the above-mentioned elements of space, time, colours, qualities of surface, numbers, etc.

Understanding of all these elements will require a certain experience in handling of the surroundings, something many children with CP have too little of. It is however important to realize that poor motor skills, spasms, etc. are no reason not to acquire such experiences. Good fantasy on the teacher's part may be necessary to find pleasant and meaningful ways to make these experiences available for these children.

The task facing the pedagogue initially will be to assess the extent of the pupil's basic knowledge and exactly what he/she is lacking in these fields. This is essential, in order not to give the child unnecessary experiences of failing. This will also prevent wasting time and effort to instigate teaching in areas where the pupil is sadly lacking in basic knowledge. It is, for instance, ineffectual teaching to teach a pupil the multiplication table, if he/she is lacking the basic numerical concepts. The teacher must take his time on each step of the way, making absolutely certain that the pupil masters one thing, before proceeding to the next.

It is often very beneficial to utilize local environment resources in the education. This is of course a challenge both to the teacher's imagination and his capabilities regarding non- traditional thinking. One can learn different matters much better by executing practical tasks than learning about them by talking. It will also be important to learn first about the close things.

In rural areas, where farming is the main occupation, agricultural subjects may for instance be introduced in the teaching. Not only the disabled pupil, but also all the others, will enjoy this break in the routine. The possibility of learning something meaningful increases; learning which may be useful to the pupil later in life.
It is a misconception to believe that the disabled should be protected to the extent of being excluded from the society in which they live. Only by being involved physically and socially, given meaningful tasks to perform and regarded as integrated and important parts of the society, will the disabled acquire the skills and self-confidence they need to live independent lives later on.

4. Visual-motor co-ordination

Visual-motor co-ordination problems

Brain-damaged children often experience what is commonly known as directional problems. Directional problems may exist as part of a general spacial problem or may manifest itself as an independent problem. This too is an organically conditioned problem, affecting the ability to let the hand follow signals from the brain.

Directional problems often cause clumsiness, the writing of inverted letters or numbers, the turning around of whole words. All these things may happen despite the fact that the hand motor function itself is good enough. Some children with such problems may also easily loose their bearings when they are reading books. They may forget which line they were reading, or which mathematical problem they were just about to do.

Directional problems also manifest themselves when a child is dressing or undressing. He finds it hard to distinguish between front and back on a garment. Space orientation may also cause problems: Where is the toilet? In which direction must I go to find the classroom?

To compensate for visual-motor co-ordination problems

When the hand refuses to write the way you want; when letters are being inverted; when the shirt is put on with the buttons on the back - the world becomes a very difficult place in which to orientate yourself - find the correct bearings. For children with directional problems, this is their everyday life. To find the way in books, follow the line when reading, draw a flower that really resembles a flower, all this and a lot more are nearly not overcomeable difficulties. It takes a lot of extra energy just to perform relatively simple tasks, and the result may frequently be very disappointing.

Directional problems are very common in children with CP, but in varying degrees. These problems are organically conditioned and will not go away with training. It is very important that the teacher is fully informed about these difficulties, planning and executing his teaching accordingly. If the teacher is kept in the dark, he may easily commit serious errors by putting pressure on the pupil to perform better within fields where no amount of training can produce the results wanted.

There exist certain training procedures developed with the intent of exercising the visual- motor functions, in the hope that this is transferable to the forming of letters. However, such training procedures have proved to have very limited transfer value. If the training is to succeed at all, it should be aimed directly at the chosen skill. A multitude of sensual stimulants should be employed:

- Forming letters/numbers in sand
- Tracing in sand
- Writing blindfolded, etc.

If the desired effect is not achieved within a reasonable period of time, using the pupil's motivation as a gauge, the teacher should consider compensatory measures. When the directional problems are severe, this should not however prevent further learning.

A possible and sensible solution is to employ letter stamps, or a typewriter at a relatively early stage. By such means the work tempo may be increased, and the child may use his talents without interference from the directional difficulties.

If the child experiences problems in following a line when reading, the use of a ruler underneath the line may be the simple solution.

It is also easier for the child to use cards with one task or exercise marked on each, than to cope with the apparent jumble of many problems on a page.

Directional problems are very frustrating stumbling blocks in schoolwork. The teacher should be aware of the fact that they are not related to intelligence, but are very specific problems which may easily reduce the child's motivation. Pressuring the child should be avoided and everything possible be done to organize the teaching in a way that reduces the impact of this disability.

5. Perseverance

The problems of perseverance

Some children show a tendency to repeat an act far beyond what is usual or necessary. This is termed perseverance. The term may be illustrated by the child

writing "a"s on page after page, or by the child who was unable to stop banging the desk, until he/she was literally stopped.

Perseverance tendencies may also be the reason why a child finds it difficult to change from one activity to another. This may be a reason for the delay of development.

To stop perseverance activity

The tendency to continue an activity as a stereotype pattern may be a hindrance to further learning. A child may be sitting with the letter stamps, in the process of stamping the word sun. Instead of finding the next letter after stamping the "s", he continues stamping the same letter, and would probably fill the entire page unless he was stopped in time.

Consequently, the teacher must be able to interfere, determinedly, but carefully, in order to break the perseverance process.

In many children, the wish to continue with familiar tasks instead of attempting something new, is very noticeable. This is not necessarily perseverance, but more an expression of insecurity faced with the unfamiliar, maybe coupled with a fear of failing.

LANGUAGE AND SPEECH AS A TOOL FOR COMMUNICATION

Turid Blix

LANGUAGE AND SPEECH AT SCHOOL AGE

1. Introduction

In the past one had the attitude that communication could only develop if the the child mastered the spoken language. Today we know that the child establishes and develops communication skills through nonverbal and pre-verbal activities. Some children - e.g. deaf children born into deaf families - will develop the skills of a nonverbal language with codes and grammar all of its own. We also know that for some children a nonverbal code system may be a breakthrough to verbal language. Other children may have difficulties to develop a functional verbal language and must be introduced to alternative communication tools.

Our main aim is to give children with CP a communication instrument that is most functional for each individual child.

The spoken language is a tool for communication. It will always be composed of verbal and non-verbal elements. Unfortunately today we still meet an under-evaluation of the non-verbal element of communication. This attitude will reduce the chances of communication for children who for one reason or another have difficulties with verbal elements of communication. These elements may have to do with comprehension or with expressive speech.

The aim of this chapter is to present processes of assessment and training of children with CP who also have language disorders and/or speech impairments.

It is often difficult to distinguish whether the root of the difficulty lies in components of language comprehension or in components of speech. If possible, it will be important to make this distinction in order to be able to give the child the best treatment, teaching and training.

Unfortunately the child is often as old as 3 or 4 before the parents get enough courage to ask for help. Sometimes help will not be asked for until the child starts school. Usually the reason for asking for help is that the child is not **talking**. However, it often may turn out to be the **language** that is faulty or lacking.

First of all I would like to define and differentiate communication, language and speech:

Communication:

Communication means first of all to share. We share and interchange feelings, thoughts, opinions, or information by sets of codes and symbols that all partners can understand and handle. (See also ch. II).

Language:

Language is a system of symbols used in thinking and establishment of concepts. It is a tool for communication. The verbal languages are unique for human communication.

Speech:

Speech is an organized system of sound codes produced by the human voice. For this production an intricate combination of fine motor skills is being used. It is one form of the manifestation of verbal language, and the most used one.

It is important to distinguish between the impressive/comprehensive and expressive parts of language. Disturbances can occur both in the impressive and the expressive process. These disturbances may inhibit communication.

In this article I will mainly be concerned with impressive and expressive verbal language.

The word "language" will be used mainly to indicate comprehension.
The word "speech" will be used mainly to indicate expression through the use of voice.

2. Important factors in arranging assessment, teaching and training sessions

If a child you are working with has been through a language test and the test shows unexpectedly poor results you must consider some important factors.

The atmosphere surrounding the child is of great importance. A stable, calm atmosphere during the session reduces spasticity and changes in muscle tone. Movement will then work with the child and not so much against it.

The child may be unable to express himself clearly, or may not understand everything that is being said, but he will feel and experience the atmosphere. Sometimes he will experience the emotional environment even to a greater extent

than a verbally- strong child. At times, brain-damaged children apparently compensate for deficiencies in language/speech by developing an almost supernatural sensitivity, intuition and grasp of the situation. They may understand entire sentences or grasp the essence of what is being communicated, in particular contexts. The situation, tone of voice, gestures and mimicry all together support this comprehension. This comprehension is important for the children's orientation and social interaction.

The same children may, however, have great problems in language tests, for example in naming or pointing out various objects and functions. Language tests isolate individual concepts and measure the amount of language details the child can comprehend. This is necessary in order to enable the teacher to form an idea of the child's quantitative and qualitative language abilities and the child's level of language maturity. This again is essential for planning the programme and amount of training.

Language tests will indicate the exact understanding of words and their place and meaning in a sentence and in a text as a whole. If a child has a good grasp of a situation but achieves a low score during a language test, parents and others who know the child well may have problems in accepting this.

They may often maintain that the child understands everything! This may consequently lead to an overrating of the child's language level, and the tutors may fail to fill in the missing links in due time. The child's general poor language foundations will eventually lead to a situation where the child lags behind his classmates. It will then be extremely difficult to ascertain where and how the necessary corrective measures should be introduced in order to heighten the child's language levels.

In assessment procedures, the teacher must distinguish between language and speech in order to clarify what the child masters and what is the root of his problems.

Disturbances in children's ability to communicate will therefore be described as a disturbance in:

- Language comprehension skills,
- Speech-motor skills,
- Both language comprehension and speech-motor skills.

3. Disturbances in language comprehension

Problems with comprehension, primarily due to sensory disturbances or sensory defects

- Sensory defects pertaining to all senses, for example vision, hearing, smell, taste, touch and temperature (tactile) and movement (kinesthesia).

Problems with comprehension due to perceptual problems

- Problems due to faulty or incomplete transmission and integration of sensory impressions.
  Perceptual impressions may become incomplete and give a distorted picture and understanding of the environment.
- Problems with storage and delay
  - Because of impaired storage children may have problems with delay and incorrect memory of sensory impressions.
  - Associations seem not to function, and concepts that naturally could be associated (for example knife - fork - spoon) do not seem to connect.
  - They may know what the right word is but are not able to activate the proper word.

To compensate, the child will form and use his own symbols and gestures and signs. In cases when this is the major inhibition of communication it is of utmost importance that the child is introduced to an individually adapted alternative communication system so that he does not give up communication. This may be permanent or transitional.

4. Disturbances in speech-motor skills

Speech is an expressive part of verbal language. In speech movement becomes vital for communication. Speech is not only the production of sound, through the movement of tongue, lips and jaw. The brain must have the ability to activate the right symbols from the memory and transmit them to the use of speech.

Problems with the generation of sound due to motor disturbances

- The child may suffer from paralysis or other physiological disturbances of the tongue, lips, jaw, pharynx, vocal chords and respiratory system.
- The child may have abnormal position of teeth (dentition) or palate.
- The adenoids and/or tonsils may be abnormally swollen.

Problems with the generation of sound due to central incomplete and/or delayed transmission of signals from the brain to speech organs
The child may produce few, if any, sounds, without any clear meaning.

ASSESSMENT OF SPEECH AND LANGUAGE

1. Some general remarks about assessing a child

In later years one discovered the great advantage of assessment of children. This means that one makes notes of the strong and weak sides of a child's abilities and the child's best channels for attention and communication. It is important to know what the child is interested in. Only then does one start to investigate and note down the child's weak points and gaps in function and knowledge. This way one will have a better possibility to interact with a child rather than to be mainly confronted with disabilities.

In this chapter I will focus on parts of the speech therapist's work that can be applied by ordinary teachers. In order to plan an intervention it is essential first to know the child's general functions with regard to vision, hearing and mental capacity, as well as to have an understanding of the child's communication abilities and how the child experiences the emotional environment.

The assessment will start on the outside, with the child's visible behaviour and production of sound and will then delve deeply into its ability to speak, understand and use language. The speech therapist will start assessing the child's abilities concerning speech and slowly go into assessing the child's language ability and comprehension.

It will be of utmost importance that the reader adapt the given examples to the culture and language the child is surrounded with.

2. Assessments concerning motor functions in speech organs

Speech organs

Is the child able to:

- open the mouth as an act of will
- move jaws sideways
- make underhung jaw

- stick tongue out, to the corners

- close mouth and breathe through nose for three minutes
- make O - by moving lips
- alternately smiling and pouting

- bite, chew, suck (through straw)
- swallow normally
- blow out a candle without air escaping through nose
- smell (with mouth closed)
- spit

- imitate sounds when asked
- how is the quality of the voice? (hoarse, full of air, normal)

Articulation

Is the child able to imitate:

- single vowels and consonants?
- subsequently consonant plus vowel?
- consonant compounds plus vowel?
- imitate entire words?

Motor speech disturbances

- Does the child omit sounds which he finds difficult to pronounce?

Central speech disturbances

- Are the words distorted?
- Are sounds mixed or jumbled?
- Are syllables interchanged or shortened?

Mobilization of speech

- Naming concretes (parts of the body - objects within the room - things in general). Let the child hold one thing at a time and name it. Then put it in a box or bag as part of a cleaning up game.
- Naming simple situations from everyday life (one-word level).
- Explaining situation pictures at sentence-level.
- Playing in sand box or on table with free speech.
  - varied vocabulary?
  - correct construction of sentences?
  - grammatical conjugations concerning gender, time and numbers?

  Make notes. A tape recorder if available can be helpful for this part of the examination. Enables you to sit down later to analyse the active use of language.

3. Assessments concerning the child's language comprehension

Is the child able to?

- Point at parts of the body - his own or at that of the teacher?
- Indicate things within the room. (The child may indicate either by pointing with his hand or by eye movement.)
- Point out things chosen according to a function:
  Place three objects at a time in front of the child:
  What can we use when we:
  - drink
  - lock something
  - eat
  - write or draw
  - read
  - brush teeth
  - cut, etc.
- Point out concrete objects according to named concepts. Place in front of the child familiar objects from the child's environment and every-day life such as:
  - eating and drinking utensils
  - things the child likes to play with
  - things the child knows from everyday chores

Does the child know the meaning of prepositions? (This is a purely grammatical exercise).

- In front of, behind, above, underneath, in, on, next to, between, etc. In this exercise we suggest using objects, toys or pictures which you place in front of the child (on the floor or on the table) in different positions and you instruct the child to e.g.:
  - Find the ball which lies underneath the chair - repeating the key word "underneath" several times.

Is the child able to match colours? (Match objects with same colour).

Does the child understand relations?

- cold - hot,
- heavy - light,
- empty - full,
- large - small, biggest - smallest,
- few - many,
- short - long,
- first - last

- different from - same as, related sentences. (Find the one who sleeps).

Next will come the following questions

- Can the child name colours?
  - Name them one by one when asked.
- Is the child able to distinguish between different figures?
  - Employ the matching principle? (Put one on top of another).
- Does the child know the figures by name?
- Can the child manage spontaneous counting to 10 or 15?
- Is the child able to conserve quantities?
  - Count a number of objects and express afterwards how many objects there were without counting again.
- Can the child spontaneously spot a quantity up to 5 objects?
- Gender, pronoun, person.
  - Use pictures or drawings of:
    - boy, girl, man, woman, aunt, uncle, etc.
    - I, he, she, they, adults, children
    - vocations or occupations: farmer, policeman, teacher, etc.
- Is the child able to carry out instructions in several parts?
  - Start with simple (single) messages - and expand progressively. (Can you show me/get your shoes, jacket, hat, etc.).
  - Can you put the soap on the washbasin and bring your toothbrush over to me?

Negations

- What we are not playing with
- What we cannot eat
- What we cannot sit in/on
- The one which is not good, etc.

Use pictures or draw the concept on a piece of paper, or use toys from the dolls' house, or objects from everyday life.

Does the child comprehend the meaning of questions such as

- Do children sleep?
- Can boys ride a donkey, bicycle?
- Can girls ride ride a donkey, bicycle?
- Can tomatoes sing?
- Do elephants use the telephone?

Construct several sentences and let the child answer yes/no. This exercise gives you

an impression of the child's experience level - vocabulary - range of mind.

Auditory distinction

- Show the child pictures of objects that rhyme, 2 - 3 at a time. You name the objects, then let the child find one of them:
  - head - bed: find head
  - boy - toy: find toy, etc.
- Show the child pictures of objects which you name correctly and incorrectly alternately. Let the child signal when the correct name is said.

Auditory memory span

- The child repeats sequences of figures and sounds in increasing numbers.
  - Three figures are read loudly and clearly.
    - The number of figures should be increased gradually. Normally a child of 5 years or more should be able to remember (repeat) at least five figures or vowels.
- The child repeats single words in sequence (at least four).
- The child repeats entire sentences of increasing lengths. (At least six words without problems).

General conclusion

As a general conclusion, which may be of value during the evaluation, I would like to mention briefly that the exercises described in this chapter should be mastered by children with a linguistic maturity of a 5-year old.

Children with a maturity level above this will normally express that by a steadily increasing vocabulary - synonyms - antonyms, longer sentences, foreign words.

Children functioning at a lower level will demonstrate this by failing grammar and sentence structure and decreasing lengths.

The 3-year old will normally master prepositions, relations and conjugations, but negations, colours, quantities or longer, meaningful sentences will to a greater extent be mastered at the 4-year level.

METHODS FOR PRACTICAL WORK WITH SPEECH AND LANGUAGE

1. General advice for training motor skills of the mouth and speech stimulation

In this part there will be put emphasis on the following difficulties:
- Sound generation
- Articulation
- Dribbling

Assessment of motor skills, which has been described previously, shows the areas in which disturbances or damage may occur.

What can be done to improve the condition, ultimately enabling the child to express himself in an understandable manner?

Already at this point, it is necessary to emphasize the need for a realistic evaluation of the child's damage. Unrealistic expectations create frustrations, not only in teachers, but to an even greater extent in parents and the child himself.

2. Voluntary movement and sound generation

If the child cannot do voluntary movement with his mouth and/or cannot produce sound you should get alarmed, and if possible consult a specialist in the field.

By voluntary movement I mean that a six or seven-year old child should be able, when told to do so, to:
- Open the mouth
- Stick the tongue out
- Close the mouth again
- Make sounds

The child who will remain sitting soundless with his mouth open will normally also experience additional difficulties such as:
- Tongue thrust
- Problems with chewing
- Transporting food from the front to the back of the mouth
- Drinking and
- Swallowing.

A substantial percentage of these children may never be able to develop legible speech. The goal for stimulation of the mouth, the swallow and facial movements in such cases, should not be speech, but senso-motor improvement of facial expression and eating skills.

It is important to remember that the functions needed for eating and drinking also are needed for facial expression and speaking. Therefore, in cases where speech can not be expected, training of motor skills of the face, mouth and swallow is as important as for children who may develop speech.

The children with a strongly reduced control in these areas must improve these functions so that eating may become a pleasant situation. An improvement in these functions will also increase the range of their facial and sound expression. This may improve their non-verbal tools for communication because they will be easier understood and /or interpreted.

To achieve this we must find out:

- First, which body position will be the best for the child.
- Next, which head position will be best for the child.
- Finally, in which position should the teacher be in order to make communication as attractive as possible.

The right body and head positions are fundamental if the child should:

- Normalize facial mimicry
- Keep mouth closed and still
- Breathe through the nose
- Keep tongue still and inside the mouth
- Reduce dribbling
- Improve eating/drinking functions

  You must refrain from:
  - stuffing food into the mouth of the child,
  - scraping the food off the spoon with the aid of his teeth

  You must also let the child by himself:
  - take the spoon to his mouth,
  - move the last few millimeters towards the food of his own volition, in order to prepare throat and pharynx to receive forthcoming food. (More about eating and feeding in the next chapter.)
- Learn to smell
- Learn to suck (feeding bottle initially, if necessary)
- Learn to blow (by pinching nose, if necessary)
  - candles
  - soap bubbles

- straw in water
- feathers.
- dew on mirror (Let the child make drawings in the dew afterwards).

This training can be carried out by parents and/or teachers alone, or together with a physiotherapist.

3. Training of motor skills necessary for speech

Training of motor skills, when speech is the main aim, can only be initiated when the child is able to imitate mouth movements and sounds.

Also in these cases must the child learn the basic movements and functions:

- Suck
- Blow
- Masticate
- Bite
- Swallow
- Spit
- Smell

Exercises involving these movements and functions must be carried out daily, prior to the sound production stimulation. The training may become more meaningful for the child and give better results by incorporate this training in natural situations.

4. Dribbling

Dribbling is a frequent problem in Cerebral Palsy. Dribbling may make the child feel uncomfortable and the child may develop a sore chin. Dribbling may make the child appear unesthetic.

The following exercises have an active restraining effect on dribbling, while speech is encouraged:

Exercises for smelling

- Teach closing of mouth
- Breathing through nose
- Practice the retracting muscular movements of the tongue
- Encourage speech: Open vowels, A - E - O.

Swallowing

- Pronunciation of consonants K - G.
- Rolling R.
- Children with CP have a lower swallowing frequency than the average. They must therefore be given verbal reminders to swallow, e.g. saliva. (Suck in - swallow.)

Smiling/Pouting

- Make the following sounds: O - I - E .

Sounds make the lips more flexible and encourage a firmer closing of the mouth.

Biting/Masticating

- Make the following sounds: M - B - P - D - T - L.

Spitting

- Make the following sounds: S - F - T.

Blowing

- Strengthens the ability to make firm lips, prolongs the expiration phase of the respiration, increases lung capacity. Results in clear, pronounced vowels.

Sucking and drinking with a straw

Exercising closing of mouth (see also **a.**, **c.**, **d.** and **h.**).

- In order to suck the child must be able to close its mouth.
- The child must also learn to breathe through the nose. Children with CP have a tendency to fix lips in a permanent "grin" due to reflexes and spasms. It is necessary to counteract this by direct massage around the mouth. This is especially important with children who suffer from additional epilepsy. Medication against epilepsy may result in decreased sensitivity around the mouth and slack lips.

  Learning to suck.

  Some children experience great difficulties with sucking.

  If the child is an excessive dribbler, in training sessions, liquids should be taken in by sucking until dribbling stops, or when the child is 10.

  Sit directly opposite the child and at right height. The child should not bend his head backwards or lift the eyes over midline.
- Use feeding bottle initially.
  - assist the child in keeping lips firmly closed around the nipple, which must have a large hole, if the child does not have swallowing difficulties.

- put the nipple well into the mouth.
- Advance to using a straw after a while.
- Use initially plastic, or other bottles which can be squeezed to make the contents come easily into the mouth in order to start the sucking reflex.

- Drinking with a straw.
  - keep the lips firmly closed around the straw manually.
  - pinch the nose lightly to start the first sucking reflex.
  - watch the head; it should not be leaning backwards, but be kept in a middle position, or the child may choke!
  - if necessary, strike your hand firmly, but not too hard from chin downwards over the larynx to initiate the swallowing reflex.

  Short, thick straws are best in the beginning, in order to let the child support his lips against the bottleneck or juice container. If the child bites the straw instead of sucking, assist him in unclenching the teeth by pressing the cheeks with the thumb and index finger.
  You must always be very sensitive when handling the child's face mouth and throat.

Stimulation of the mouth

Place yourself behind the child. Make sure this position feels secure for the child and does not initiate spasms because the child is trying to keep eye contact with you. Perform the following exercises:

- Place your fingertips on the cheeks, and massage slowly and gently in circles.
- Put your index fingers above the upper lip (not on the lip itself), and move the fingertips towards each other and downwards. (The area between nose and lips is often stiff and short, the upper lip not quite covering the teeth.) Massage lightly by moving fingers downwards.
- Place both index fingers on the upper lip and pull it with circular movements upwards, exposing the teeth.
- Close the lips.
  - Pinch lips with thumbs and index fingers to form "beak".

- Other fingers should be placed underneath the chin to keep mouth closed.
- Tell the child to breathe through the nose.
- Keep this grip as long as the child will allow himself to be treated in this fashion. (If possible, at least 5 minutes.)
- The child may hold his own lips eventually, if he/she is capable of doing so.

Remember, the child's mouth is very private, therefore you will have to do the mentioned exercises with great sensitivity.

Please observe the following if the child experiences breathing problems when you are holding his nose:

- Check adenoids and tonsils.
- Has the child caught a cold? Administer nose drops. It is very important that the child really can breathe through the nose, particularly at mealtime, in order to co-ordinate breathing and swallowing.
  When the nose clogs up, dribbling increases.
- Wait until the child gets rid of the cold

- Mouth massage may well be given before a meal.
- Stimulate for about three minutes prior to each meal. This is a good preparation for a pleasant meal.
- Encourage the child to masticate with mouth closed.

Strengthening the mouth's motor functions

- Let the child hold a wooden spatula (or other suitable object) between the lips for a period of time. Increase the length of the periods progressively. (I usually find counting valuable in this context, to show the child that he/she is getting better with each exercise.)
- Cleaning up game on the table.
- Use small and light objects (pencil, bottle top, cotton bobbin, lump of sugar, match box, lego block, etc.)
- Ask the child to clear the table by putting each object into a basket or box using the lips only. (Pretend to be dog or cat.)
- Thread a thin piece of elastic through the holes in a four-hole button. The child sticks the button in his mouth and tries to hold it there (with closed lips). Pull with increasing strength on the elastic until the child lets go. (Motivation: Stop watch to time how long the child can resist the pressure without letting go.)
- Children above the age of 7 may be verbally stimulated and reminded to suck in saliva (must of course be able to suck), and swallow it. It is very

important to remind them to swallow, as this function does not come naturally to them as it does to other children.

5. Specific speech training: imitation of mouth movements by encouraging the child to watch the teacher's mouth

Make faces

- Grumpy mouth
- Happy mouth
- Inflated cheeks
- Tongue from one corner of the mouth to the other
- Licking upper lip
- Make bump on the cheeks with the tip of the tongue
- "Cleaning house" - in this context, the inside of the mouth - licking walls, ceiling, floor
- Make clicking sounds with the tongue
- Make sucking noises (ah - ah with the vocal chords)

Spitting

How to teach it:

- Stick the tongue out and blow air first, then
  - say T with the tongue out. Finally;
  - spit (saying T) with the tip of the tongue behind the front teeth,
  - smacking lips - (tip of the tongue),
  - play squirrel - (lift the rear part of the tongue),
  - make engine noises - (let the lips vibrate),
  - fire engine - o - i - ba - bu.

Imitation with sounds

- The child must still be watching the teacher's lips. Occasionally by both of them looking in a mirror.
- The vowels are very important in all speech:
  - Let the child imitate the vowels one by one and keep the sound for as long as possible. ("Vowel song" with fixed melody).
  - Time each vowel as a competition between them for the motivation of the child.
  - Imitation of similar, meaningless monosyllables: Ma-ma- ma, da-da-da, ga-ga-ga, la-la-la, etc. (May be sung to a well-known melody and with varied rhythms.)
  - Imitation of dissimilar, meaningless monosyllables: La- le-li, ga-ge-gi, la-ga-le, etc. (Directed babbling.) Make many different animal

sounds.
Imitation of meaningful words.

It is important that when the child makes an attempt, hopefully with increasing frequency, you should never correct his articulation! Everything is acceptable! Give praise and encouragement. Corrections will come in a later stage.

It is also important to remember that at this stage the training is aimed at exercising the speech organs and encouraging the need to speak, and the joy of talking!

ARTICULATION TRAINING

When the child's imitations improve, and it uses the words spontaneously to a greater extent in everyday situations, the time is ripe for the finishing touches. The teacher should prepare a list of the sounds that are still missing, and choose one sound at a time for practising during a specific period.

- The lip produced sounds are the easiest to learn: M - P - B.
- Practise volume through blowing exercises.
- T - D - N - L - R, which demand lifting of the tongue tip, are also difficult to master. In order to overcome these problems, an intensive licking training is advisable:
  - Licking with the tongue the upper lip (put some chocolate there) will be necessary.
  - Licking a saucer (ice cream, etc.) can also be included in the training.
- Previous experience has revealed that the sounds S - F - V are difficult to express for children with CP, and these sounds will have to wait till later.
- With paralysis of the pharynx the sounds K and G are normally the last to be learned.

1. Suggestions for the teacher

- Ideally, the teacher should place himself/herself in front of a mirror and watch closely how his/her mouth forms the sounds.
- The teacher shall now show the child how to form the mouth and produce the sound.
- Explore which sounds the child can manage at the moment.
- Combine the sound which is being practised, with a vowel and imitate meaningless syllables.
  - Practise ma - me - mi - mo.

- then switch the letters around: am - em - im - om.
- continue with some simple words, with the sound as the first letter:
  - man - mammy.
  - If the exercise was successful,you can reward the child by putting a nice picture in the child's note book that follows him to his speech training sessions. Write the word underneath the picture.
- Repeat in the next speech training period the words written in the book. You do this after the warm up part containing motor training of the mouth.
- Automatic counting from 1 - 15.
- Naming of weekdays and months is good speech training.
- To begin with both teacher and child practise together
- Later on the child imitates the teacher. (Please note that this is not a mathematics session, but a speech training session). A good idea is to show the numbers, when they are imitated.
  - three letters/numbers at a time are sufficient.
- Let the child imitate you first, then
- Match the sounds and letters/numbers.
- Prepare many such pictures of letters and numbers.

It really is incredible how much a child can gain from these repetitions.

- The same procedure may be followed with
  - colours
  - concepts such as big - small - full - empty - cold - hot, etc.
- Read repeatedly books the child is familiar with, until he/she recognizes the text.
  - omit subsequently some of the keywords, and let the child fill them in.
  - the same procedure may also be followed with songs. Let the child initially fill in simple words; then longer and longer phrases.
- Drill the child in whispering and shouting words.
- Teach the child to slap the table for each syllable in the words. This is particularly important for children who omit parts of words, or only pronounce the first or last part of the word. Some children talk in short bursts and very quickly. Marking the syllables with slaps of the hand may help them to slow down and pronounce each syllable correctly.
- Another trick to make them slow down, is to drill them in breathing

between each word or to sing the words.

GENERAL ADVICE REGARDING LANGUAGE STIMULATION

Language is action, a combination of thinking and moving. When the child is unable to move the mouth functionally, he will just be sitting, listening and watching. This is too passive! The child is not getting enough experience in manipulating both objects and thoughts. The child's inactivity will also make it difficult for his environment to understand and interpret his communicative efforts.

Assessment of the child's impressive language should give an approximate indication of the child's level of language ability. Based on the results, the first goal should be to fill in the gaps discovered in the child's language foundation.

If the child is suffering from a central language problems related to disturbances of brain functions, it is important to recognize the basic rules in teaching children with that kind of difficulties. But firstly, how do we know if the child suffers from a central language problem? Maybe the child is only under-stimulated?

There are certain qualitative differences prevailing in cases with a central language problems:

- The child distorts the pronunciation of words.
- Syllables and sounds are changing places,
- The child is unable to imitate mouth movements voluntarily, even if the automatic/spontaneous mouth motor skills are relatively good.
- The ability to imitate sounds or words is poor.
- Occasionally objects are being named with words within the same category, e.g. spoon for knife, cat for dog, train for ship, table for chair, etc.
- If pressed for the correct name, his concentration wavers and deteriorates conspicuously. The child starts to yawn and squirm, really suffering.
- The child is frequently sitting with gaping mouth and "wagging" tongue, trying hard to find the correct place to put the tongue, as shown by the teacher.
- The child is unable to pronounce words spoken by the teacher.
- When the child is encouraged to explain pictures, he hesitates for a long period of time, and is fidgety and restless.
- The child may have a tendency to laugh excessively and loudly, trying to divert attention by doing other things.

1. Language stimulation emphasizing the use of linguistic signals

You can emphasize sounds, words or sentences. You can do it through the change of pitch of your voice, the change of speed and/or rhythm of your speech, and showing pictures of or drawing the words you want to emphasize; you can make gestures parallel to the spoken word.

When using gestures, you can use those of the sign language of the deaf. The sign language is already put into a system and it is being shared by other people. But, if these signs are unfamiliar to the teacher, a self-devised system of gestures and signs may be gradually invented. The child himself may have some gestures that he uses, occasionally or even systematically with family members and friends.

The signs should of course be used in conjunction with speech. It is imperative that the child look at the speaker from the position that is most functional for the child's vision.

- Only short sentences should be used, and
- Pronunciation must be slow and distinct, preferably at a slightly higher pitch than normally.
- It may be of great advantage to sing the words, or emphasize the keyword.
- Raise the voice level slightly on the keyword.
- In addition to the gesture and the speech, pictures, pictograms, Bliss symbols or word pictures may be employed as further emphasis.

2. Alternative communication

It is important to differentiate between alternative communication and communication aids.

Alternative communication:
Alternative communication is any communication system based on means other than speech.

Communication aids:
Any aid that will make words and alternative communication easier accessible.

If the child for the first time receives alternative communication training when entering school, it is extremely important that the teacher investigates the child's previous experience with communication. The teacher must also do his/her own observation of:

- The child's understanding of the principles of communication and
- The child's most available channels for communication.

With alternative communication we mean any kind of signals and symbols agreed upon as codes for communication. These signals and signs may be expressed by movement, sound, graphics and colour. One may combine the different means of communication. Some of these means of communication you may find standardized, other you will create together with the child.

The following questions must be answered:

- Does the child interact?
- Does the child communicate?
- How do you know that the child is paying attention to you, to other people or to objects?
- How do you know that the child calls your attention?
- What are the child's communication channels?
  - movement, gestures and/or pointing - which and how
  - production of sound - which and how
  - by his eyes - how
- Through which channel(s) will it be best for the child to establish communication?
- What will be the best way for the child to attract attention from the surroundings?
  - the child's voice?
  - bell or other sound-producing objects such as dry fruits, on a place the child can reach easily?
  - light signal or other visual signals?
  - battery-powered switch which generates a sound?
  - other signals?
- How should the child point quickly and clearly?
  - with the hand?
  - a pointer attached to the front of a helmet?
  - light on the helmet?
  - mouth stick?
  - eye indication?
- How should or can the child keep the other person's attention long enough?
- Does the child function in a dialogue as regards listening and answering?
- How can the child express alternative meanings with associated symbols if the receiver does not understand?
- How can the child learn to choose between given alternatives?
- How can the child learn to take initiatives and come up with suggestions without others suggesting the activity first?
- What aids will the child need in order to be able to take advantage of accessible communication channels?

In addition to the above questions it will also be important to ask the following:

- What will be motivation for the child to communicate about?
- How quickly will the child realize that he can manipulate his surroundings?
- How quickly does the child learn
  - pictures?
  - symbols?
  - letters?
- What are the child's motor skill possibilities for
  - pointing?
  - making signs?
  - writing?
  - using voice?
- For what level of linguistic maturity should the aid be developed?

There are no patent answers to these questions on what the various children need. No two children are alike; teachers will have to devote time to observation and will, to a certain extent, have to employ the trial and error method with each and every child.

You want to make sure that the child interacts and feels that communication can be important for himself and therefore will be ready to make an effort for learning to master a communication system and aid. Therefore it will be important to choose the right things to communicate about and the right channels to communicate through before before training the techniques of the aid.

It ought to be mentioned, however, that not only children with incomprehensible speech can enjoy alternative communication. Some children refuse to speak because they are embarrassed by bad articulation, even if they manage to make themselves understood. Some children refuse to speak if the speech training turns out to be a negative experience.

Alternative communication aids may provide a relief from anxieties in connection with the demands made on the child to speak clearly and understandably.

Many parents and teachers fear that alternative communication may influence speech negatively and inhibit it further. The child will point rather than talk. Experience shows that this may be the case during the first period of using alternative communication, while the child is learning the new symbols and concentrating hard on mastering their use. However, mastery of communication through communication aid will increase self confidence. If the child is at all capable of obtaining speech, this self-confidence will help him to relax and will

provide the basis for the development of speech. Some means for alternative communication systems aids and techniques are described below.

Gestures and sign language

Sign language can be the aid that is best suited to replace/assist speech for all children with speech impediments. The hands are at all times available to the child, and the use of signs may in itself, in the long run, be a positive influence on the child's ability to learn how to speak.

Some countries have picture books that also have pictures of the gestures used in sign language for the deaf. These can be of good help for children with language problems who are acquainted with these signs. If such books are not readily available in your country, you may use gestures you find natural and make up your own sign book which the child can relate to.

If the child can manage the motor skills, let him learn the signs or gestures you are using. Use your hands in helping the child to make the proper signs. When the child is learning the individual letters of the alphabet you can also use the one or two-handed alphabet.

Remember to be consistent when you are using your "home-made" sign language. You must also inform your colleagues and other staff as new signs are introduced. Informing parents and siblings is particularly important, and they should also learn the signs for use at home.

If the child has difficulties moving a body part, manipulating it may get the child started. This is quite difficult with actions of the mouth. With the fingers, however, it is much easier to achieve voluntary movement. We can train the fingers by moving them, bending and stretching them. As a result the child may easier take action with its fingers. In my experience, the fingers may in many cases provide a backdoor to speech!

It hardly matters at all if the signs or gestures are not quite accurate due to the CP. The most important thing is that the child is "acting out" the language process.

If, however, speech does not follow the use of gestures and signs, nothing is lost; we have provided the child with more signals on the road to communication.
For children with very pronounced spasticity or very little muscle control, the use of signs, however, may be extremely difficult. (I use the sign language nevertheless in language stimulation.) Pointing at visual symbols may in such cases be an alternative. The main condition, however, is that the child possesses relatively well-developed motor abilities to be able to cope.

Sound

One can also develop with the child a code system based on a differentiation of sounds produced by:

- Voice differentiation
- Rhythm patterns executed by a hand, foot or any other body part, switch, etc.
- Use of different sound-producing materials

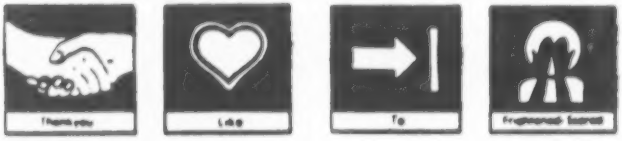
Pointing board with pictures

Explicit photographs or pictures pasted on cardboard. It is preferable to group the pictures in categories; clothing, activities, persons, nouns, etc.

Pictogram

Black and white silhouette pictures gathered in a cover or on stiff cardboard. Very suitable for age groups from 3 - 4 years or until the children can start with Bliss. Very well suited for mentally retarded children at school age.

PICTOGRAM IDEOGRAM COMMUNICATION



CORE PICTURE VOCABULARY

Pointing at word pictures

When the child has learned to read word pictures, these may replace the Bliss-symbols. If the child starts directly on word picture-communication without prior

Bliss, it may be a good idea to procure a Bliss-board and use it as a pattern for the selection and positioning of word pictures.

Letter board

If the child can read and write well, a hard cardboard with the letters placed in squares may be an aid to the spelling of key words in the communication process. This is a slow method, but combined with frequent use of word pictures, this type of aid may be the best choice for the accomplished reader/writer.

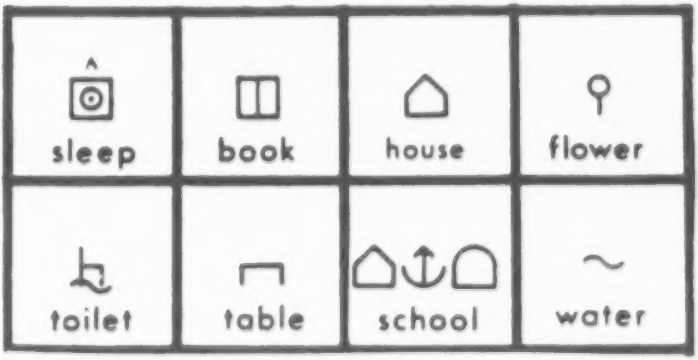
It is important to note that for using the aids from c. through g., a way of pointing must be applied. The child can point with a body part, an aid attached to a body part or with eye contact.

Bliss

The Bliss-system was developed by Charles Bliss and is based on simplified, Chinese characters.

The system utilizes word groups with different colours, clearly organized and easy to understand for the recipient with the word picture written above the Bliss-symbol. However, it demands well-developed visual/motor abilities.

To be able to comprehend, the recipient ought to be able to read. According to my experience, the Bliss-symbols are best suited for older children in school.



What aid should be chosen to improve the child's communication ability?

All alternative communication replacements have their advantages and disadvantages. Generally speaking, no alternative or aid can totally replace speech in our verbal culture. An aid will always be more time consuming and long-winded than speech itself.

In order to choose the appropriate aid for the appropriate time, a thorough assessment of the child's mental, physical and linguistic resources is essential.

What is important when introducing and training with alternative new aids

As soon as a new symbol has been learned, the child must be given opportunities to use it in active communication. Of course, the child must first be able to point out the new symbol amongst others when asked to do so, to ensure that he knows the position of it, and what it actually stands for. If hand signs is the chosen alternative, the child must be drilled in using them, so that he can display the proper sign on request.

But, you must be very alert to what may seem an accidental use of signs, pointing, etc. It may not be accidental. Be sure to reinforce such activity.

Active use of the signs is by far the most preferable choice. It is in this context that the concept is being generalized and becomes action and communication. How can we achieve this?

You may also instruct a situation where the concept is relevant, or ask the child directly: What do you want? What do you want to do?

A doll may be used for acting out situation such as: the doll wants to go to the toilet. Show the doll where it is supposed to point. The doll points at the child's instructions. The child points at or shows the sign.

It will be very important for the child to receive a quick answer, a positive response to his effort.

If it is at all possible, the child's request must be met immediately. The child's communicative action through the aid must be a positive action, and get a result. Teachers and parents must receive full information at this stage. Everyone must pay extra heed to the child's newly acquired signals and respond to them.

If the child has difficulties in adapting a new aid, one should help by saying for instance: "I think you would like to listen to some music, but can you show me the sign for it, too? Just to make absolutely certain." In other words, the child must be reminded of the possibilities the new aid offers in the initial stages of this training and learning of taking initiative.

It will be essential that children in the same group become aquainted with each others' communication aids in order to develop interaction and dialogue in the group.

3. How do you choose what to talk about?

The selection of concepts and objects to be chosen and drilled is very important. The concepts must be related to everyday life, and must relate to subjects the child is interested in. You must choose important key words which the child undoubtedly will need frequently during the day in order to control his/her own life. The child's daily routine must therefore be analysed, by asking the following questions:

- What is natural for the child to ask for during the day? (People like parents, brothers/sisters, things, events to happen.)
- Which physical requirements may the child have? (Food, drink, rest, toilet, cleaning himelf, brushing teeth, clothes, toys, homework, etc.)
- Which activities may the child choose between in school or at home? (Read, listen to music, watch television, go for a walk, schedule of the day, play, do jig-saw puzzles, write, draw, paint, etc.)
- Which sensations will be natural for the child to express? (Hunger, thirst, being too hot, being too cold, being tired, don't understand, don't know, yes/no.)
- Which feelings will be natural for the child to express? (Fear, anger, happiness, joy, sadness, pain, etc.)

4. Technological aids

Typewriter

May help the child to communicate in the classroom. The letter plate, however, accompanies the child wherever he goes, indoors and outdoors.

The Cannon computer

Is an easily portable mini-typewriter. A narrow paper strip emerges from the machine with the child's written message.

Electronic pointing board

By means of an electric switch, a cursor moves from square to square, marking what the child wishes to communicate through pictures, pictogram, Bliss or word pictures.

Data communication

A computer may be of great help to a child who has mastered Bliss or reading/writing. This new technology may be of particular assistance to children with severe handicaps. With the aid of hand or head operated switches, the child may operate the computer's programmes for writing or the Bliss-method.

Programmes for the Bliss-system and for writing have so far only been developed for stationary computers. Pointing boards and signs will still be necessities, both in order to learn the symbols and to communicate during recess or in environments where the computer is not available.

The most advanced technology in the field of alternative communication aids is a computer with a voice generator, also called synthetic or digital speech.

By using a keyboard or pushing programmed switches on a board, the child can produce speech in the form of single words or entire sentences. Such computers are portable, but still very expensive.

FOR ADDRESSES CONCERNING ALTERNATIVE COMMUNICATION AIDS SEE "ADDRESSES OF INTEREST "AT THE END OF THIS BOOK.

READINESS FOR READING

Jorunn Fiveland

READINESS FOR READING - WHAT DOES IT MEAN?

Readiness for reading may be defined as a level of development, which makes it possible for the child to benefit from the teaching of reading .The term is usually connected to the first school year (sometimes the last year in pre-school or kindergarten).

When talking about children with special educational needs, we may be fully justified in using the term throughout the educational period, which could be through the whole life.

The expression "readiness for reading" is not a definite one, hence hard to define. It depends upon:

- The environmental attitude towards the spoken language
- The environmental attitude towards reading
- The child's functional level in the initial stage of school education
- The teacher's choice of goal and method
- Available resources

Children with reading and writing difficulties are often not quite ready for it. If one does not help them to get ready, their difficulties may persist throughout the entire school period. These difficulties may include:

- Lack in sufficient language experience
- Lack in sufficient automizes motor skills
- Visual problems
- Auditive problems
- Difficulties of a mental character, etc.

1. Characteristics of a "ready" child

- Shows interest through:
  - Wanting to learn how to read
  - Asking about letters
  - Wanting to know the meaning of illustration captions
  - Wanting somebody to read stories to him/her
- Verbal language abilities corresponding to his/her age level:
  - Has a good vocabulary

- Talks clearly and understandably
- Is proficient linguistically

- Can interpret pictures and series of pictures: (This corresponds partly to the development of language and partly to intelligence.)
- Has the ability to differentiate between sounds and words.
- Has the ability to interpret letters and words.
- Has advanced far enough in the development of his/her personality to be able to act on
  instructions, even when given to a group.
- Motor skills necessary for reading are sufficiently developed.
- A minimal ability or possibility for concentration.

To help children who are not yet fully ready for reading when they start schooling, we supply them with exercises aimed at stimulating their readiness-level. These exercises are usually given prior to the start of the actual education.

2. What the child has to learn before learning to read

Develop a relatively ample vocabulary - language understanding.

Mastery of verbal language is an essential basis if the child is going to learn to read without overwhelming difficulties and if reading is to become a meaningful activity for the child.

Already at pre-school age the child should be given the opportunity to achieve the ability of listening, looking and expressing himself through any kind of communication. This will be important for the child's acquirement of language. In order for the child to grasp concepts more easily all senses may be activated. This will be of special importance when dealing with children with greater learning difficulties.

Examples:
- Sing for and with the child
- Say nursery rhymes with the child
- Make body movements to emphasize the rhythm of the linguistic action
- Make body movements to emphasize the content in songs/jingles
- Use of visual impressions (pictures or objects) in connection with auditory influence

If you find out that the child has not learned how to listen, you will have first to teach him this.

Teach the child to listen

a. **Preparatory games**

- You will have to make the child aware of sound
- The child will have to learn to differentiate sounds
- The child will have to be able to remember sounds so at the beginning use sounds you know are meaningful for the child.
  - Make a sound, then make it again and ask if the two sounds were the same
  - Make a sound, then make another one, very different, and ask if the two sounds were the same ones

b. **Guessing game**

- You are behind the child, or the child sits with eyes closed.
  You ask: What sound are you hearing now?
  Suggested sounds:
  - Knuckles rapping on the table
  - Pencil banging against the table
  - Fingers snapping
  - Feet stamping on the floor
  - Keys rattling on a key ring
  - A coin dropping
- The child will have to be able to listen and to understand concepts.
  - Put in front of the child different objects: pencil, scissors, eraser, button, envelope, book and needle.
  - Say the following: I'm thinking of something we can move. It's made of metal, has sharp edges, and we use it when we are cutting paper and cloth. (PAIR OF SCISSORS.)

c. **Riddles**

Place a picture in front of the child and say :
I'm thinking of something small and white with long ears, a short tail and soft fur. (RABBIT.)

d. **The child is trained in detaching incorrect sentences.** (Pictures are essential.)
Examples:

- The mouse is big.
- The elephant is small.
- The sun is cold.

Gradually increase length of sentence and degree of difficulty.

Help the child to make sense of words

Teach the child a few nouns, then some verbs and finally supplementary words. It is extremely important that the choice of words is adapted to the child's everyday life and sphere of interest.

a. **Nouns**

Suggested teaching:

- Display a picture
  - Name the noun
  - Then make a sentence using the noun
  - Then the noun again on its own

Examples:

- display a picture of, for example, a train and say loudly:
- "train"
- "this is a train"
- "train"

After doing this a number of times, the train picture may be displayed together with two other pictures. (CAR/BICYCLE.)

b. **Verbs**

- Demonstrate an action
- Say the verb alone
- Say the verb in a sentence
- Say the verb alone again

Examples:

- Throw a ball (or stone) and say:
  - "throw"
  - "I throw a ball (or stone)"
  - "throw"

Use the verb in the present tense.

You can also show drawings or photographs which illustrate actions. Use action the child is familiar with.

- Describe the picture
- Say the verb
- Then ask the child to point at the picture corresponding to the verb that was said

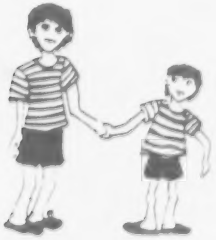
c. **Adjectives**

- Display the object(s) or the picture
  - Say the adjective alone
  - Say the adjective in a sentence
  - Then repeat the adjective

Examples:

- Show an illustration of a tall person and a short person
  - Point at the tall person and say:
    - "tall"
    - "this person is tall"
    - "tall"
  - Then point at the short person and say:
    - "short"
    - "this person is short"
    - "short"

After doing this a few times, ask the child to point at each person in turn when you describe them.



d. **Prepositions**

Pictures or objects are necessities to demonstrate this concept.

- Remember to point at the object which is described or discussed to emphasize the connected action.
- Say the preposition:
  - alone
  - then in a sentence
  - then alone again

Examples:

- The teacher says and points:
  - under
  - the book lies under the table

- under
- on
- the book lies on the table
- on

- Then the teacher asks if this book is under the table, or on the table.
- Tell to the child
  - there's something under the table. Can you point at it, please?
  - there's something on the table. Can you point at it, please?

If the child answers the question about the object incorrectly, the teacher should point at each object in turn and repeat the sentences several times.

e. **Words in categories**

The child explains verbally everything he/she can think of within various categories and uses pictures/objects which should be sorted.

Examples of categories:

- Fruit, furniture, clothes, vegetables, flowers, musical instruments, etc.

Help the child to develop the ability of using words in simple sentences

A child learns to speak by hearing sentences. To encourage the child to use the linguistic skills he/she already possesses and to make him/her want to use these skills, the teacher must communicate with the child on his/her level. It is important to discover themes or subjects of interest to the child and to use simple sentences. Emphasis should be placed on certain words in the discussions.

If the child hesitates in taking the initiative to such exchanges, the teacher can teach him/her by uttering simple sentences leaving out a word, expecting the child to say it. The teacher may also say the whole sentence which the child repeats. Gradually the degree of difficulty should be increased.

The aim with this must, of course, be to encourage the child to speak spontaneously. Children with CP have frequently suffered defeats in communication with others, either by not being understood or because they need more time to express their views.

If the child has serious speech disorders, the teacher must consider alternative means of communication. (See also chapters II and IV.)

a. Suggested sentences with increasing degree of difficulty which can be said first by parents/teacher, then repeated by the child

Examples:

- The car moves.
- The car moves along the road.
- The car moves along the dusty road.
- The big, black car moves quickly along the dusty road.

- Linda picks flowers.
- Linda picks many, nice flowers.
- Linda picks many, nice flowers for mummy.

- The dog growls.
- The dog growls angrily.
- The dog growls angrily at the mailman.

- Bob writes.
- Bob writes a letter.
- Bob writes a letter to grandma.

b. When the child is unable to use words spontaneously

- Say the initial sound of a word and let the child complete the word.

Examples:

- Here is my "b"--- (ball).
- This is a "sh"-- (shoe).

- Use pictures which may evoke a demanding word.

Examples:

- This is my ..... car.
- I have a ..... wristwatch.

- Then proceed to train the spontaneous memory.

Examples:

- The ball bounces up and ..... down.
- We eat with spoon, knife and .... fork.
- We go to bed at night, and get up in ..... the morning.

- Teach the child to notice its surroundings.

Examples:

- Show the child a ball and ask him to tell you all he knows about it. Colour, size, shape, smell - all in one sentence. Also

ask what the child can do with it.

- Talk to the child about familiar things.

Examples:

- the family
- the school
- the weather
- a pet, etc.

c. **When the child experiences difficulties in pronouncing words**

These difficulties can be due to:

- General and/or specific language difficulties
- General and/or specific speech difficulties

In the following you will find exercises concerning speech difficulties.

- Teach the child to imitate animal sounds and simple words. Start with vowels. Use:
  - songs
  - rhymes
  - jingles

  These are well suited to make this exercise as enjoyable/amusing as possible.

  If it is difficult for the child, he may start by imitating speech movements and various facial expressions.
- Using a mirror.

  The child can watch himself and the teacher/parent in the mirror, thereby being able to compare the speech movements.
- Touch the skin and assist the movements in order to help the child to use the correct facial muscles.

d. **Auditory discrimination of words and sounds in words**

Prior to formal reading studies, the child must learn to distinguish words, syllables, sound combinations and single sounds in the language.

The child's ability to discriminate between sounds in the language is a condition for the learning of letters and reading.

The child must be made aware of the fact that the language is composed of single words, which in turn are composed of single sounds.

The following suggestions must be adapted to different languages

- Discrimination between pairs of words.
  Use pictures or objects with similar sounds like "jump" and "bump".
- Detecting the initial sound:
  Ask for the sound, not the name of the sound
  The teacher says for example:
  What is the first sound you hear in:
  - BED - the child should answer "b" (not be)
  - TREE - the child should answer "t" (not te)
  - MILK - the child should answer "m" (not am)
- Auditory supplement.
  This exercise reveals whether the child can understand a word even if he does not hear the entire word.
  The teacher says for example:
  What word is this:
  - WINDO-, the child should answer "window"
  - -TOMACH, the child should answer "stomach"
- Memory span.
  In order to be able to pull letter sounds together into words, it is necessary to remember all the individual sounds, in the correct order.
  The teacher says and the child repeats:
  - 3 - 1
  - a - e
  - 2 - 1 - s
  - a - e - o
  - 1 - 3 - 4 - 2
  - d - y - o - u
  - 3 - 6 - 9 - 5 - 2

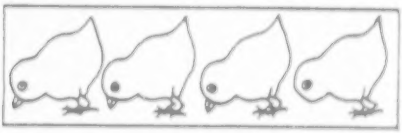
  NOTE: The child will remember as many words, numbers or single letters in a row as his mental age, +/- one.

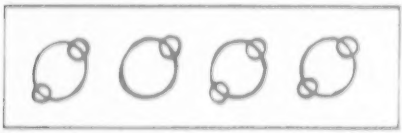
- Sound combinations.
  This exercise tests the skills from the two previous exercises, e.g. it contains both auditory supplement and memory span.

The teacher says:	The child says:
- M ..... UM	"mum"
- S .....WEET	"sweet"
- B .....OAT	"boat"

e. **Developing visual discrimination**
By the term visual discrimination, we mean the interpretation of what we can see, amongst other things by the understanding of:

- **Similarities/dissimilarities**
  The child needs to concentrate on details, form and direction to perceive which figures are similar and which are dissimilar. The child needs to be able to do this before learning letters and the art of reading.





- **Figure/ground**
  The child must direct his attention towards the foreground, disregarding the background. When the child experiences figure/ground difficulties, the teacher must reduce irrelevant visual stimuli in the teaching.

- **Visual supplement**
  These exercises reveal the child's ability to draw spontaneously from memory a figure as an entity, when only parts of that figure are visible. This is something the child must be able to do in order to glean something meaningful from most illustrations and to be able to read fluently.

f. **Developing spatial/directional sense**
When learning letters and numbers, the direction of each symbol is of the greatest importance. The child must first be taught the meaning of expressions describing directions and positions, e.g. in front of, behind, under, over, first, in the middle, etc.

Activities/exercises to develop spatial/directional sense:

- **Localizing sound**
  - Observing from which direction given sound emerges.

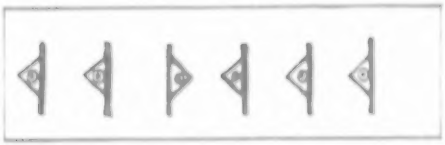
- **Positioning in a room**
  Ask the child to follow the the following directions. If the child cannot execute the activities with his own body, the child may use

toys, figures point to pictures, etc.:

- Stand in front of the chair.
- Stand behind the chair.
- Sit down on the first chair.
- Sit down on the last chair.
- Crawl under the table.
- Take one step backward.
- Take one step to the side.
- Take one step forward.

- **Left/right**
  - The child points at his own:
    - left hand
    - right ear
    - left ear
  - The child points at the teacher's:
    - right hand
    - left ear
    - left foot
- **Inverted figures**

  The child ticks off the cup or figure which is not pointing in the same direction.



g. **Copying of geometrical forms**

Developing an interest in learning to read

When the child starts learning to read, it is essential to find suitable books and the proper method for the teaching.

The books should be motivating and meaningful, the form of expression and choice of words matching the reader's own language at the relevant age and development level.

The choice of words ought to be adapted to the child's reading abilities.

Developing the ability to concentrate

The abilities to sit quietly, to concentrate on a task for some time and to work independently are often lacking in children with Cerebral Palsy or various brain damages. This may manifest itself by hyper-activity, motor agitation and restlessness. The teacher can help the child to improve his ability to concentrate by:

- Giving the child tasks which he/she can master.
- Placing the child in a comfortable manner.
- Placing objects in a manner best suited for the child's ability to focus.
- Placing objects in such a manner that the child will not develop spasms.
- Removing disturbing elements.
  - Objects the child does not need at the moment.
  - Noises and distractions in general.
- If necessary, an adult should be sitting by the child while he/she works.

HOW TO TEACH READING

1. Reading methods

We have two basic groups methods: synthetic methods and analytic methods.

Synthetic methods

These methods use the smallest units of the language as bases:

- Sound
- Letter or
- Syllable

joining them together to words and sentences.

Analytic methods

These methods start in the opposite order from the above-mentioned. One learns words or entire sentences as entities. When a series of such entities is rehearsed, the analysis may take place.

The sounds, letters or syllables are isolated, then used to form new words. Word picture and sentence method are representative for these methods.

Disadvantages of using pure methods

The disadvantages of using the pure synthetic methods seem to be that too much emphasis is placed on mechanical sound exercises, and that the main purpose of reading, comprehending the content, becomes secondary. It is also claimed that the learning of sounds (letters, syllables) is an abstract and artificial process which harmonizes badly with the child's natural way of learning. Immature children in the auditory field easily develop reading problems by solely using the synthetic method.

Pure analytical methods make great demands on the child's visual learning ability and intuitive comprehension of words. If sufficient emphasis is not placed on the analysis during the learning of individual words and on the sound technique, the child will lack sufficient background when faced with new and unfamiliar words. Children with impaired sight are particularly handicapped when these methods are employed.

Combined methods

During recent years, these two main groups of methods have steadily closed the gap. Most pre-school and elementary school teachers agree today that a good method should employ as many senses as possible (sight, speech, hearing, feeling (tactile sensibility)), thereby covering most pupils' needs.
Most children with CP seemingly learn reading more quickly by the analytical method than by the synthetic method.

2. Reading difficulties

Difficulties with reading and writing (dyslexia) are common in children with Cerebral Palsy.

However, dyslexia is also common in children without CP. In approximately 5 per cent of pre-school children, the difficulties are serious enough to warrant special educational steps.

In order to discover whether a child has reading and/or writing difficulties, the following ought to be taken into account:

- Has progress in reading and writing during the first few years in school substantially been lower than the average for classmates?
- Has there been an obvious difference between the child's reading and writing skills as compared with verbal comprehension and expression and results in other subjects?

The poor reader is usually a slow reader. The reading is usually so slow that it is difficult to understand the meaning of the text. If a child in addition to his reading problems also has a poor vocabulary and poorly developed concepts, the comprehension of what he is reading is made even more difficult. Children who have difficulties in joining letter and syllables into words tend to develop reversals.

Examples of reversals:

- feel / flee
- glove / golve

Reversals are also closely connected with directional problems.

3. Diagnosis based on various types of difficulties

The Norwegian professor H. J. Gjessing has formulated a useful basis for his work with children and youths needing assistance with reading and writing problems. The problems are divided into five groups:

- Auditory
- Visual
- Audio-visual
- Educational, which will include emotional and pedagogical factors

Auditory problems

Even if a child's hearing is normal, he may experience problems with the perception of the finer nuances of the spoken language. This may in turn influence the ability to combine sounds and letters correctly.

The child is unable to distinguish between sounds that sound alike, e.g.:

- g - k
- d - t
- b - p
- v - j

Visual problems

Even if a child can see perfectly well, he may experience problems with recollection and perception of letters or word pictures/shapes.

Problems may arise with letters that look alike, e.g.:

- b - d
- u - n
- o - d
- f - t, etc.

Words may be read and written backwards. e.g.:

- sun - nus

Audio-visual problems

Children experiencing problems in both the above-mentioned groups are classified as having audio-visual problems as is the case with most pupils with reading and writing difficulties.

Emotional dyslexia

In this group, the reading and writing difficulties are symptoms of emotional problems. However, it may often be difficult to establish whether the emotional problems are the reason for the difficulties, or caused by them.

Pedagogic (educational) dyslexia

The children found in this group are usually those who have not been able to benefit from the education in the normal school system. A natural conclusion is that some of those children were generally immature when they first started in school and/or the educational approach has been inadequate.

If the child has not reached the necessary level of maturity by the time he/she starts in school, it must be the teacher's duty to introduce preparatory reading exercises.

EATING AND FEEDING

Miriam Donath Skjørten

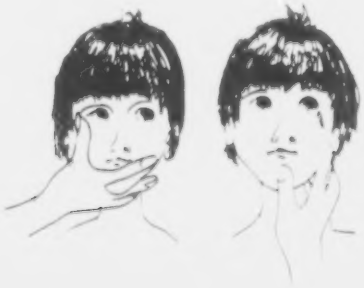
Feeding is a matter of communication as much as it is a matter of eating and nourishment,

therefore:

- As a rule you should place yourself in such a position that you and the person you are feeding can have eye contact and/or natural body contact.

  You will have to know where the child's field of vision is, and adjust your position accordingly.

- At times when you have to inhibit some of the person's jaw action whilst eating or drinking, you may have to place yourself behind the person, at the person's side or in front of the person.



Meals should always be enjoyed

The child should enjoy the food and the natural social interaction that will follow a pleasant meal. Food should be served in an aesthetic manner.

A meal must not be rushed and therefore you must plan plenty of time for it.

In order to enjoy the meal as much as possible, the child must learn to:

- Suck
- Bite
- Chew
- Swallow

If the child must eat mashed food, serve the food unmashed so that the child sees the colour and shape of the food that is being served.

Mash the food while the child is watching

Do not hurry feeding; you must observe the child's expression and respect his or her need for pauses.

When the table or surroundings get too messy you just wipe it off without too many comments.

Never use negative reinforcement (punishment such as scolding, pushing the hand away, etc.) during mealtime.

Nourishment is important and soft foods should be reduced as soon as possible to train jaw movement and chewing.

Eating position must be adjusted individually and in doing this, you must give consideration to the child's motor abilities e.g. stability of the head, extensor thrust, etc.

Usually we sit while eating, however some children with CP may master eating better while standing in a standing table/board.

Correct sitting position:

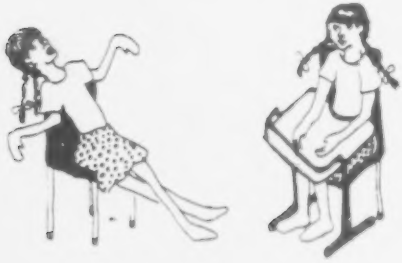
- About 90° between
  - legs and thighs
  - thighs and trunk

  push bottom well to the back of the chair
- The head must be in extension of the trunk.
- The chin slightly forward.
- If a child can not control the head and/or the trunk, you must tilt the chair slightly back and/or support the head, however not so much that the **food just runs down the child's throat.**
- Arms should be slightly extended and on the table at about waist height. For some children you may have to stabilize one extended arm in order to increase their ability to use the other hand and put food into their mouth.

To correct the position as shown on the next page:

- bring head and arms forward - flexion breaks up the extensor thrust
- push bottom well to the back of the chair

You want the child to swallow actively.



Important when feeding with a spoon or the fingers

Spoon:

- Put the spoon into the mouth in a right angel
- Let the spoon rest on the lower lip, not too deep in the mouth
- If the tongue protrudes you can lightly depress it with the spoon
- Encourage use of lips by motivating the child to take the food off the spoon himself
- Do not scrape food off the spoon against the child's upper teeth
- Food should be cut in manageable pieces

Fingers:

- Let the food rest on the lower lip not too deep in the mouth
- If the tongue protrudes you can lightly depress it with your finger
- Encourage use of lips by motivating the child to take the food by himself. Do not push the food into the child's mouth
- Food should be cut in manageable pieces

Encourage the child to bite off pieces of, for example, a biscuit.

Encourage the child to feed himself; however, do not turn meals into eye-hand co-ordination training sessions.

Drinking

- Drinking with a straw may help to round the lips and discourage tongue thrust
- Cut away the upper part of e.g. a yoghurt cup, this will make drinking easier

- Stand behind the child, hold the head in correct position with one hand and with the other hand hold the cup and let the child drink as independently as possible - this means that the child should, if at all possible, take in the liquid by his own activity.

If the child can suck, use a straw.

Bending straws may be of great help.

You can also stabilize the jaw by supporting the chin.

You should try to teach the child correct movements by demonstrating them.

People are most conscious of their speech muscles while eating, therefore encourage babbling and imitation of sound during and after meals.

It is important that you understand the child's frustrations when eating.

The frustrations the child may experience may be a result of:

- Oversensitivity in the regions of the mouth
- Eating difficulties such as chewing and swallowing
- Communication difficulties

TEACHING MATHEMATICS

Gerd Gylder Corneliussen

In many cases it can be difficult to isolate the teaching of mathematics as a separate subject in elementary education. There will always be many natural connections to other subjects, such as language and speech therapy, religion, arts and general knowledge subjects.

Concepts in mathematics will always be closely connected with the child's linguistic skills. One will expect that he has acquired these skills on the various levels of development.

The basis for all teaching, as well as the teaching of mathematics, should be the child's present level of development and qualifications. In order to assess this realistically, various forms of observation are necessary.

Different types of observation methods have been developed for pre-school and elementary school teachers.

The objective is to provide a detailed picture of the child's strengths and weaknesses in order to facilitate teaching tailored to each child's individual needs and capabilities.

The following areas are covered by the observation:

- The ability to see and interpret by means of the eyes (visual perception)
- Eye/hand co-ordination (visual-motor skills)
- General motor skills
- The ability to feel and recognize objects by touch (tactile skills)

Interviews with the pupil's parents or others who know him/her well may also be necessary, in order to establish a detailed picture of the child's background and references. If the child attended kindergarten, it will be natural to consult kindergarten personnel during the first period.

Obstacles and objectives to learning

The general learning difficulties a child may have will also influence a child in acquiring skills in mathematics. As in other activities, also in the teaching of mathematics it will be important that activities are closely related to meaningful situations that have relevance to the child's practical environment. The objectives of the activity should be clarified to the child as thoroughly as possible within his

capacity and qualifications.

Previously the accepted method was mainly to emphasize the utilization of the child's strengths, further develop them and mainly ignore the weaknesses. Today's education is still based on the child's strengths, but if the child's total function will improve considerably by also attending to weak areas, one will do so.

Meaningful learning

The activities facing the child during the basic mathematics education should as far as possible be experienced as positive and meaningful activities. They ought to have relevance to the child's environment and be practical. The purpose of the activity should be made clear to the child as thoroughly as possible and within his capacity and qualifications.

The material employed in teaching mathematics should be as concrete as possible, ensuring that all the child's relevant senses are optimally engaged. If the child has an expressive language, it is important that the teacher listens actively to ascertain which concepts the child uses spontaneously in certain situations.

1. Language and mathematics

The teaching of mathematics must attempt to develop further the linguistic skills the child already possesses, in order to create the best possible basis for further learning. New concepts must be attached to those already acquired, enabling the child to recognize what he is doing.

Numbers are natural parts of a child's language from the very early stages, but the actual meaning of the words may have escaped him. In order to visualize numbers, it will often be natural to build on the child's own assertions. It is important to utilize expressions which the child can manage with the greatest ease, in relation to his handicap.

Children use numbers frequently without understanding the actual meaning of the words. A child can express numbers in many different ways:

- Verbally
- With lines and circles symbolizing the numbers
- By drawing figures
- By writing, either spelling out the numbers with letters, or by writing the numeral itself
- By gesture

How the child expresses himself spontaneously and to what extent he understands

these concepts, are factors contributing to pinpointing exactly where mathematics teaching should start.

Integration of learning

It is characteristic of mathematics that a concept will combine with other concepts, which develop further on each other. Each new activity will build on previously-learned skills. The successful mastering of a new problem is conditioned by the child's having absorbed previous experiences and teaching. These will combine to create a basis for further development within the subject.

Mathematics teaching should be based on insight into and knowledge of the structure and nature of mathematics. The two basic components are quantity and order. These are referred to as cardination and ordination.

2. Cardination and ordination

Cardination

Cardination will include the understanding and internalization of concepts such as quantity, classification, correspondence and conservation.

The pupil must be taught how to arrange similar objects in groups , i.e. to sort elements according to characteristics, properties and qualities. The understanding of the feasibility of grouping similar objects must exist in order to teach the pupil that two or more groups may constitute new groups.

Some concepts will be closely linked to this understanding of quantities and of classification and correspondence as well as the understanding of object permanence:

- all
- some
- none
- few
- many

Suggestions for exercises with the concepts: **many, few, all, none**:

- Vary the number of stones in the heaps to illustrate the words many, few, all, none.

These concepts are usually understood before the age of 6 or 7. Brain-damaged children, however, have in many cases poorer references and background knowledge, hence little or no insight in the use of these concepts, varying individually according to the degree of mental or physical handicap.

Simple aids for the early teaching of mathematics are:

- stones
- branches or sticks
- dry fruits
- blocks

which the child can order in heaps or count.

Ordination

In addition a number denoting a given quantity, it can also represent its proper place in a sequence. Ordination will include the understanding and internalization of elements such as counting and seriation correspondence.

This concept denotes how dissimilar objects are placed in consecutive order according to increasing or decreasing numbers. The pupil must be taught how the numbers fit together in a given order.

In order to perceive how an object is placed in a fixed position in a succession or series, there are certain concepts the child must be taught:

- big, bigger, biggest
- high, higher, highest
- wide, wider, widest
- thick, thicker, thickest
- long, longer, longest
- on top, next to the top
- second from the front
- small, smaller, smallest
- low, lower, lowest
- narrow, narrower, narrowest
- thin, thinner, thinnest
- short, shorter shortest
- at the bottom, second from the bottom
- second from the end

When teaching the above-mentioned concepts, one should illustrate them through objects known to the child.

- At first one must practise with concrete objects only.

- Then one can attempt using a mixture of objects and pictures.
- And finally one will use the concepts in given tasks.

The teacher can use any objects that will clearly demonstrate the concepts you want to teach the child. Use object the child sees daily.
Remember that learning the above-mentioned concepts must precede the learning of numbers.

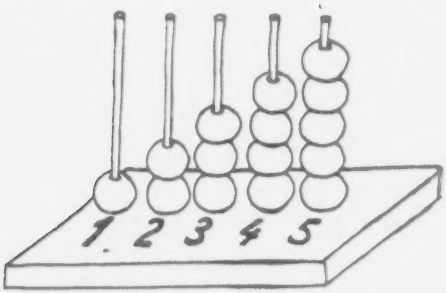
3. Numbers

Systematic teaching of the use of number symbols, i.e. numerals, should not be initiated before grouping activities and concepts of quantities have been practised. For children with CP with motor disorders, the writing of numbers may often cause problems. To avoid such problems during the early stages of the mathematics education, the pupil should be allowed to choose other symbols than numerals to denote quantities. Lines or crosses, or simply some signs, used in connection with verbal statements, will give the same meaning as the numerals.

The most suitable forms of expression for the child must be found in co-operation with the child and utilized during the first period of learning the various concepts. Pictures, number stamps, blocks or sticks for counting and various objects from the environment may be utilized as symbols before the actual number symbols are introduced.

When the actual numerals are being introduced, the use of set concepts and number concepts must be closely related. In addition to the use of objects, number symbols and language, tracing in sand, numerals cut out of sandpaper or other coarse materials may be relevant.

- Counting one's own and other people's fingers is a good aid to demonstrate the actual figure we are working with.
- One can have pictures to show different amounts.
  - Ask the child to point at a numeral and where there is the same number of objects .



Correct shaping of the numerals is often difficult for children with motor disturbances. Coarse crayons on large sheets of paper, chalk on blackboard, or charcoal on smooth, wooden boards are methods which are ideally suited to this type of work. The writing utensil should be coarse and the writing surface should offer some resistance, making the hand movements as firm and controlled as possible.

- You can make up stories in which you use numbers.
  Example :
  - A short verbal story about Tom, the fisherman. He caught fish.
  - You show a drawing of three fish and you ask the child:
    - Can you count the fish and tell me how many he caught?
    - Can you write as many lines as there are fish?
    - Can you write the numeral which fits the quantity?

Addition

When the child has acquired an understanding of the concepts of cardination and ordination some simple addition may be introduced.

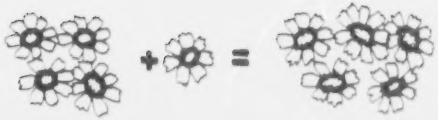
- The introductory exercises in addition are usually composed of unequal quantities of similar objects which are added together to make one quantity - a set.

- Then each element of the resulting quantity is counted and given a quantity or set symbol (number).
- Before the child has learned all the numbers, the quantity may be symbolized by the a number of lines, stones, beads, etc. corresponding to the number of elements in the quantity.

The pupil must be given the opportunity to do a similar exercise, or watch a demonstration by an adult.

When the pupil has acquired a certain self confidence in handling these things, a counting line may substitute the objects, giving the pupil an opportunity to count the quantities, thus managing the task on his own without any form of assistance.

II + I = III



IIII + I = IIIII

Very few pupils actually reach this stage where they can manage without assistance early. Those pupils who fail to achieve this should be given support and various aids to help them develop further.

Subtraction

Many children experience more problems with the understanding of subtraction than of addition. The concept that a quantity is to be removed from an entity is not as easily understood as the adding of one.

To facilitate the comprehension of subtraction, concepts such as entity and part are used:

- A quantity (an entity) is composed of a number of parts.
- Removing a part from an entity results in a rest.

As in addition, the first step in subtraction is to make the problem as concrete as possible for the pupil. Initially, the pupil must be given the opportunity to work closely with the teacher who explains thoroughly what is happening. As the pupil gradually gains an understanding of the subtraction process, the pupil may be left more and more to his/her own devices. The use of concretes or objects can be reduced, as the need for support is dwindling.

To create a more enjoyable atmosphere around the education in mathematics, the teacher may use stories and relevant objects in connection with the problems. A varied choice of problems and the proper motivation to do them appears to be very important. The pupil himself and the environment in which he/she lives should be the basis for many problems in mathematics.

You can tell stories with pictures to demonstrate subtraction.

Multiplication

As an introduction to the mysteries of multiplication, the teacher must make absolutely certain that the pupil comprehends how various elements are coupled together one to one, or one to many. The pupil will have to compare the objects (elements) in two or more groups (entities) to each other (called correspondence).

By adding equal numbers of objects to several groups, the pupil will by various means find out how many objects there really are.

Many pupils will experience problems with multiplication, as there are many calculations to keep track of. Knowledge of the multiplication table is a must, if these calculations are to be made quickly. If the multiplication problem consists of two or more numbers with several figures, the pupil must know how the problem is to be arranged and how a carried number should be noted, in addition to a thorough knowledge of the multiplication table. To many pupils all this appears to present unsurmountable problems, particularly if there are directional problems in addition to learning problems.

Many pupils will benefit from fixed routines concerning the arrangement of mathematical problems. A step by step explanation may be written on a piece of paper and kept available at all times. The teacher must also be available to guide and direct, should that be necessary.

4. Pupils experiencing special problems with mathematics

Some children with CP are likely to experience greater problems with learning of mathematics than others. The functioning levels among such pupils are probably as widely diversified as in any other group of pupils, but with a majority of pupils with greater or smaller problems concerning this subject in particular.

Some pupils often experience mastering anxiety or mental blockages because the teaching is on a level significantly above the one on which these children function. They experience nothing but a series of defeats, creating a very strong feeling of inadequacy and inability to cope with the problems presented. Gradually, all interest in the subject may be lost, along with the motivation to continue working. The learning will be directly connected to so many negative experiences that the pupil's achievements over a period of time will decline rather than improve.
In order to counteract anxieties and blockages, the teaching should be as diversified and enjoyable as possible, without dropping or forgetting the goals set for the education. Ideally, the teaching should commence on a level slightly below the

expected functioning level, and progress from there when when the child is ready.

Each lesson should also contain some problems or exercises with which the pupil feels that he/she really can cope. For the younger pupils, games or play-like activities may constitute such exercises, whereas older pupils might find interest in simple competitions, crossword puzzles or picture puzzles with numbers, etc.

The child's interest in and need for mathematics

If the pupil is interested in learning mathematics, he/she should be encouraged to explain what experiences are incomprehensible in mathematics. This may give the teacher and the pupil a clear picture of the problems as the pupil sees them.

Mathematics contain so many different forms of problems or exercises, from simple practical tasks to complicated problems demanding logical thinking and good reasoning ability. A teacher must think in practical terms, based on a total evaluation of the pupil's mental level of development.

When facing limits of learning capacity one must ask:

- Does the pupil need mathematics in order to manage his/her daily life?
- Does he/she know how to tell the time?
- Is he/she able to prepare and cook food?
- Does he/she know how to handle money?
- What about measurements and weights?
- Or does the pupil possess resources within the mathematical field great enough to justify giving preference to that rather than to more practical tasks?

The goal of teaching mathematics must first of all be to prepare the pupils to cope with the problems of everyday living.

Brain-damaged children will often profit from establishing a set of strategies for the solution of some problems. Our experience is that they more or less solve the problems automatically, once they have mastered the technique of problem-solving. Tasks posing demands on problem-solving thinking (problems set out in writing) often cause them great difficulties. By teaching the pupils how to break such written problems down into elements, they may learn certain techniques enabling them to solve simple, written problems.

When concentration and tempo fail

Concentration problems in children with CP will also manifest themselves in the mathematics lessons. Lessons of up to a duration of 45 minutes may often be too long. It may be far better to split the lessons up into shorter periods and vary the

teaching between activities closely related in contents.
Motor skill difficulties are adding to the complexity of learning mathematics. If a pupil has to spend most of his/her strength and energy on handling the practical side of mathematics, it is obvious that there will be few resources left for problem-solving. Each problem will be so time consuming that the pupil will have precious little time for the practising of problem-solving.

Various relief measures must be considered in order to award the pupil more time to solve problems.

- Is it possible to enlarge the task sheets to increase the space available for writing?
- Can the tasks be written down, enabling the pupil just to jot down the answers?
- Can the answers be dictated by the pupil and written down by somebody else?
- If technical aids are available, a calculator or computer may render the child invaluable assistance.

In addition to a slow tempo in education, other pupils may experience problems with the inversion of numbers (directional problems). Some numbers are turned upside down, others are turned 180 degrees. Directional problems may sometimes be reduced by simple drawing describing how the numbers should be written and which the pupil can refer to constantly. Some pupils must constantly be reminded of how to write numbers.

Little ability to concentrate makes mathematics education problematic. Activities must be repeated daily over long periods of time to enable the children to absorb the learning completely; frequent repetition is essential.

Keeping up motivation for learning

In all mathematics teaching, continuity and expert evaluation of the work being carried out is of the utmost importance. The pupil himself must be focused towards the understanding that he is constantly absorbing new activities and making progress, even if the achievements seem small and take a lot of time to achieve. Praise and encouragement must be a natural part of the daily routine in order to create a sense of accomplishment and progress.

Mutual contact between teacher and pupil is essential. The pupil must trust the teacher, and feel that he/she can co-operate fully with his/her tutor. The teacher, on the other hand must meet the child on his level, plan accordingly and show faith in the child.

Books

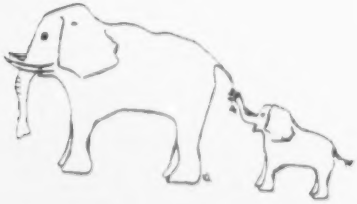
In many cases suitable textbooks, satisfying the needs of the individual pupil, are very hard to find. Often the teacher must seek to adapt the book as well as possible to the needs of the pupil, e.g. by only using parts of it; using enlarged copies of selected pages, which may eliminate problems in connection with lack of writing space; writing only a few problems per page, thereby perhaps eliminating or reducing directional problems; and by using simple and clear illustrations.

To facilitate learning, tasks on all levels should as far as possible be related to the pupil's familiar environments: home and school.

5. Exercises for basic mathematical concepts

Big/small

- Drawing of a big elephant and a small elephant in the same perspective.



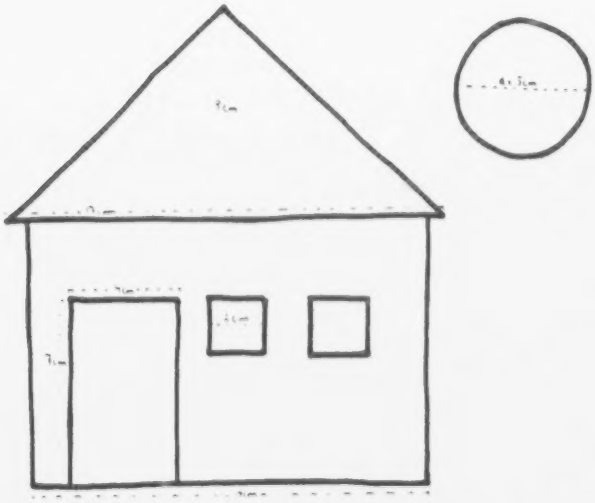
- Drawing of a big boy and a small boy walking hand in hand.

- Make up short stories about the drawings and find out who is the bigger and who is the smaller boy.
- Demonstrate the same concept with
  - children
  - objects in the classroom or
  - objects outside

- Kim's Game
  - Place small and big objects on a table.
  - Let the pupil look at the objects.
  - Cover them up with a tablecloth.
  - Ask the pupil to tell you whether the knife was small or big, etc.

Square, circle, rectangle, triangle

- Find blocks shaped as circle, square, triangle or rectangle.
- Find objects in the picture with similar shapes.
  Example:
  - A house may be composed of
    - one rectangle
    - one triangle (the roof)
    - squares for windows, etc.
- Make a house and other shapes with blocks of the above-mentioned shapes.
  - The blocks need to be quite big to facilitate easy handling.



Long/short

- Demonstrate the difference between long and short with objects from the classroom such as pencils, ropes, rulers, flowers, etc.
- Discuss a picture and find out which animals have short/long tails.

Maybe the pupil can find some more?

LONG - SHORT

Tall/short

- Drawing of trees.
  - Find and discuss which trees are tall/short. (Illustrated.)
- Build towers of blocks or stones.
  - Find out which is the
    - tall/short tower
    - the tallest/shortest
- Ask the pupil to close eyes and feel which is tall/short.
- Discuss tall/short things that the pupil can see or knows in his/her environment.
- Match cardboard pieces with pictures of tall/short objects.

TALL - SHORT

Equal amounts

- Fill identical bottles/glasses (together with the pupil or let him/her watch) with equal amounts of sand/water. Discuss and explain the concepts.
- Afterwards make a drawing of the same.
  - A glass is depicted half full.
  - The pupil is then asked to finish the drawing with equal amounts in each glass.
- Fill unequal amounts of sand/water in identical bottles/g'·sses.
  - Fill equal amounts in two of them.
  - Ask the pupil to find the equal amounts.

- Use a pair of scales. Weigh sand or other equally heavy objects. When the scales are in balance there are equal amounts in each.

Let children find equals in their surroundings.

Equal numbers

- Teacher and pupil make the same kind of necklace - (3 - 5 pearls) using large pearls of glass ceramics or wood on pieces of fairly rigid string.

- Put flowers (or other objects) in a group.
  - The pupil does the same.
  - Explain that there are equal numbers by placing the quantities next to each other.

- Put a certain number of objects or pictures in front of you.
  - Ask the pupil to copy what you did.
- Draw a farm yard with animals, buildings, trees, etc.
  - Let some of the elements contain equal numbers.
  - Ask the pupil to find the quantities with equal numbers.
- Draw quantities.
  - Ask the pupil to draw or place objects on the drawing to get equal numbers.

Over, under, up on

- Demonstrate the concepts over/under with objects.
  - Discuss
  - draw and
  - demonstrate
- The teacher uses the concepts in a short story.
- The pupil makes up a story with the concepts.

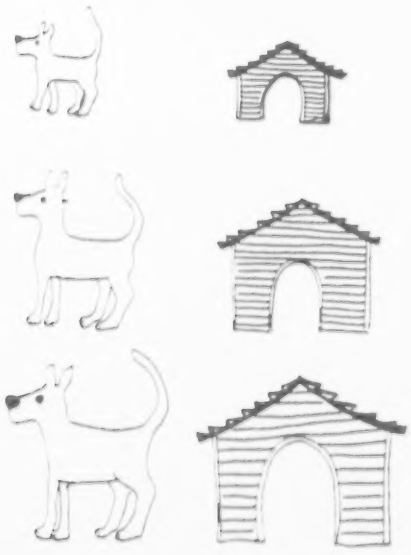
First, last, in the middle, second last

- Place a row of objects on desk/table. Let the pupil point at the first and last object in the row.
- Song games containing the concepts.
- Drawing of children or objects in rows.
  - Cross out
    - the first with a colour (e.g. red)
    - the last with another colour (e.g. blue)
      - the one in the middle with a third colour (e.g. yellow)

Matching

- Find cups to match saucers on the table.
- Children sitting together are supplied with similar objects.
- Make figures of unequal sizes to fit boxes of unequal sizes.
- Draw dogs of unequal sizes to fit into dog-houses of unequal sizes.
- Cut the dogs out and place them in the dog-houses.

MATCHING



Small, smaller, smallest - Big, bigger, biggest

- Practice small, smaller, smallest first, then big, bigger, biggest.
- Demonstrate concept with objects in the room.
- Ask the pupil to find other examples.
- Drawing of objects in three sizes, e.g. balls, cars, animals, etc.
- Demonstrate with the body s.. all, smaller, smallest by bunching up.

6. Exercises for the learning of numbers exemplified by the number '2'

A short story where the number '2' is used frequently

One day, two boys went for a walk. They met a man with two donkeys. 'Where are you going?' asked the boys. 'I'm going to buy two new ropes for the donkeys', replied the man. 'Maybe we could twine those two ropes for you?' asked the boys. 'That's very kind of you. Of course you can twine two new ropes for me', said the man.

It may be accompanied by illustrations.

Questions related to the story:

- Which number did you hear frequently?
- How many donkeys did the man have?
- How many boys did the man meet?
- How many ropes were the boys going to twine?

If possible, the pupils may twine ropes themselves.

Let the children make up their own stories.

Let the pupil feel the shape of the numeral '2' (make the number of clay or wood).

- Let him/her also trace the numeral in sand.
- Teach the correct writing of it by guiding the pupil's hand,
  - writing it in the air
  - painting or drawing it with colour crayons, chalk or coal on suitable materials.

Use exaggerated movements initially, and reduce them gradually.

- The pupil may also be encouraged to recognize and use rubber stamps with the particular number.

Make a drawing or an illustration for the flanellgraph, containing the number 2.

- Let the pupil find the 2-quantities and point at them.
  Example:
  - Drawing of children playing with: Cars/dolls/marbles.

Let the pupil draw as many elements as the number being practised.

- Make element groups to which the pupil can find the appropriate number.

Let the pupil write the numeral after a pattern, by tracing an already drawn number.
The drawn numeral must be big.

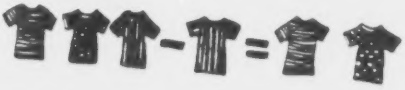
Let the pupil attempt writing the numeral on his/her own
- or find the 2-stamp amongst other number stamps.

Seriate the numbers.
- Practise seriation simultaneously.

Seriate of the numbers, but omit some numbers which the pupil must spot and fill in

Make simple problems with the number 2 as answer.
- The numbers should be illustrated with objects.
- Let the pupil experience this process by doing subtraction/addition together with the teacher. -

Use objects from the environment.



or

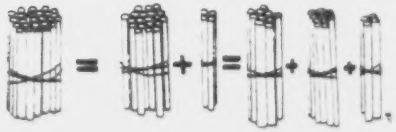
1 + 1 = 2

Make dissimilar problems with the number as answer.
- Use numbers, lines or objects as necessary.

Make simple stories containing calculations with the number as the answer.

Numbers greater than 10 are made up by 10s and 1s.

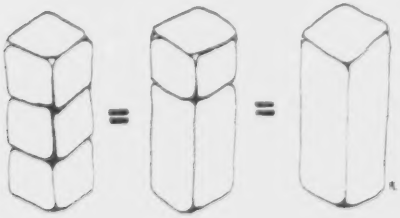
- It is important to practise the placing of the 10s and the 1s, to enable the pupil to master this when addition/subtraction is being practised with numbers greater than 10.
- 10-quantities may be illustrated by 10 sticks bunched together = 1 10-quantity.
  Example:
  - 24 = 20 + 4 = 10 + 10 + 4



Simple material to illustrate the numbers can be made by blocks illustrating the number 1; 2 blocks make up the number 2, etc. up to 10.

- The number 3 can be illustrated by blocks in different sizes as illustrated:
  - 3 blocks
  - 2 blocks
  - 1 block

  Blocks' sizes must be adapted to the pupil's hand size.



COPING WITH WRITING PROBLEMS IN CHILDREN WITH CP

Gerd Gylder Corneliussen

It is difficult, and far from correct, to generalize the writing problems experienced by children with CP. Some children have a good or adequate handwriting while others are totally dependent on technical aids in order to communicate in writing.

New writing styles to be learned and executed automatically demand a lot of effort. A brain-damaged child needs more time to practise the novelty than do others. Confusion may set in over the introduction of a new style before the old has been "automated". Changing of writing styles will often result in a mixture between the old and new one. Therefore one must choose with care the best fitted writing style for each individual child.

The most advantageous for children with brain damage is to teach them the writing style which is as closely related to the print used in textbooks as possible. The similarities between the child's own handwriting, the teacher's handwriting and the print in textbooks are important. The visual impression of the letters will be repeated, there will be less confusion and it will be easier for child to learn and to remember.

In the following we shall take a closer look at some of the problems in connection with writing.

1. Poor eye-hand co-ordination

For some pupils the brain encounters problems processing visual impressions. They will also have problems in relating these impressions to the movements of the hands. In practical terms, this means that a pupil is unable to shape the letters as he/she sees them, even if he/she has been taught how to do it. The result is that the letters usually vary in size, are inverted or distorted into meaningless lines.

The problem may have the main characteristics of

- Motor dysfunctions of the hand
- Perceptual dysfunctions, or
- Eye-hand co-ordination problem

Poor control of hand muscles

Poor motor functions of the hand will make it difficult to shape the letters. Writing

varies in size and shape and is usually big and uneven. The writing speed is usually slow. The grip on the pencil varies from cross grip to pincer grip, depending on the development and differentiation of motor skills.

The shaping of each letter demands hard concentration from the child, reducing the amount of attention paid to the correct combination of sounds. This will make the pupil uncertain about which letter he/she is supposed to write.

Visual and perceptual dysfunctions

In some children with CP the vision may be impaired. The child may have vision only in some sectors (fields) or at a particular distance from the eye. Some of these defects can be corrected with glasses, others can be remedied by placing books and writing material exactly where the child's vision is optimal.

Aids which may be employed in such cases
- Magnifying glass
- Extra lights
- Enlarged material.

The child may however have normal sensory vision, but poorly functioning visual perception.

2. Hand dominance: which hand should be used for writing?

Many brain-damaged children have no preferred hand to work with, changing frequently between one and the other. This is termed insecure dominance. In order to ease the learning of writing, it is important to discover which hand is the dominant.

Children with insecure dominance often experience spatial and directional problems too. Such problems usually reveal themselves when the child displays inability to tell:
- Right from left
- Where the various body parts are situated, or that the child makes
- Inversion of letters and numbers.

Developing body awareness - where and on which side the body parts are situated, and what they are called - may facilitate some of the work with hand dominance.

Observation of hand dominance

It may often be sufficient to note which hand the child uses in everyday situations; gripping toys, picking up a pencil, eating, combing his hair, building with blocks and throwing balls. If the child alternately uses both hands, further observation will be needed to discover the dominant hand.

Suggestions:

- Note the finger grip. The hand with the better developed grip is normally the dominant.
- Compare work tempo. One and the same task is being carried out, first by using the right hand, then the left. The faster-working hand is usually the dominant. The demands on execution and precision must be the same for both hands.
- The hand crossing the center line to grip things is normally the dominant.
    - Place two heaps of blocks in front of the child, one to the left, the other to the right. Note which hand is chosen to place all blocks in one heap.

The hand normally used to perform a majority of tasks in everyday life must be regarded as the dominant one and should also be used for writing.

Note:
Not being able to name the left and right hands with the correct name may be more a matter of language disturbance than of hand dominance, therefore one should watch the child's activity or maybe ask the child to lift the hand that is used for a certain activity rather than to lift the right or left hand.

If one is unsure which hand is the child's dominant one, one can observe if the child has a dominant foot; hand and foot may have parallel dominance, though not always!

Helping to choose the writing hand

If only one side of a child's body is damaged (hemiplegic), the child will normally use the undamaged hand when writing. The writing hand needs not be the dominant hand, which the child uses for most functions.

Children with two-sided (bilateral) damage normally use the least affected hand for writing. The other hand may in some cases act as support for the writing hand.

What can be done to develop hand dominance?

The child must be encouraged to use the dominant hand to perform as many tasks as possible. The other hand may occasionally be used as a support if necessary.

Choosing the dominant hand under all circumstances is often a prolonged process for the pupil.

Suggested exercises:

- Throwing balls, starting with small, ending up with big ones
- Building towers
- Eating and drinking
- Gripping with the dominant hand
- Drawing and painting

The degree of difficulty should be adjusted to the pupil's level, starting off with easily performed task, ending with complicated manipulations.

- Body awareness activities will also help in developing hand dominance and can be trained through songs with movements, games and activities.
  - The child names various parts of the body, touching them at the same time.
- Another method is to name each part of the body frequently and on which side it is situated.
  - Initially the teacher must help the child, naming the body part for him/her,
    then touching it, progressing to naming the part and on which side it is situated.
    The pupil is supposed to touch or move the named part.

3. Relevant concepts in the writing process

Pupils learning to write must know a few simple concepts which are essential to the correct shaping of letters. These concepts are frequently utilized to explain what the letters look like and what elements they are made up of. These concepts are:

- up - down
- right - left
- straight - curved

It is important that the child uses these concepts while learning them.

Examples of up - down exercises

The teacher demonstrates the concept up by climbing some stairs, and down by climbing down again.

- The pupil copies this if possible.
- Draw or show on flannelboard:
  - The dog jumps up.

    - The dog jumps down.
- Draw and make a short story:
    - The man gets up from the bed.
    - He lies down again.
- Draw and make up a short story with the pupil:
    - The flag slides up the flagpole.
    - The flag is pulled down again.
- Draw a vertical line and explain where up and down is.
- You look up at the star.
- You look down on the ground.

Examples of right - left exercises

- Practise showing left and right hand.
- Drill which side of the body is the right and which is the left by naming body parts and on which side they are placed.
- The teacher moves the pupil to the left and to the right, saying loudly in which direction they are moving.
- The pupil moves to the left and to the right when told to do so.
- Build a village in the sand box or outside.
    - Let the child move a figure through the village, stopping at houses, trees, etc., explaining whether house or tree is to the right or left.
- Do a similar exercise on paper/blackboard or flannelboard.
- Draw a vertical line on a sheet of paper or divide the desk in two. Ask the pupil to place various objects to the right or left of the line.
    - Then, to move the objects up to the right, or down to the left.

Examples of straight - curved exercises

- The pupil bends over (curve) and straightens up (straight).
    - Discuss several situations where one is curved, then straightens out.
- Draw on the blackboard and show how the back is curved when we bend down; straight when we are standing up again.
    - The same phenomenon can be demonstrated by lying on the floor, bending and straightening out.
- Use song games or jingles with exercises where the pupil is curved/straight.
- Let the pupil follow curved and straight lines drawn on the floor.
- Make curves and straight lines of clay, etc. and let the pupil feel the shapes.
- Let the pupil find and tick off straight lines/curves on a test sheet.

4. Writing aids

A number of pupils will undoubtedly need various forms of writing aids.

The book may not be lying quite still on the desk, or the pencil refuses to behave as it should.

To prevent books or sheets of paper from sliding about, they may be stuck to the desk with tape, or fastened with elastic or some heavy objects. A non-slip pad which prevents books or papers from sliding may be of help.

If it is at all possible, the writing support (desk) should be tilted to find the best possible working posture.

The writing utensils - pencils, crayons or chalks - should be quite chunky and easy to hold, and not easily breakable. Writing utensils should be placed in such a way that they are accessible for the child without assistance.

a Pencils/crayons placed in holes in a wooden board, etc.

b Pencils may be made thicker by placing them in a rubber casing. The grip on the pencil will not be as hard and forced and writer's cramp may be avoided.

c Casing of metal or plastic in which pencil may be stuck
Round stick to be placed inside the hand
Elastic fastening the grip to the hand

A simple hand grip may be fashioned for pupils

- who are unable to hold or grip pencils or crayons by themselves.

- If the hands cannot be used when writing:
  - a typewriter with a special keyboard may be a solution.
  - The typewriter may also be operated by a stick
    - fastened to the front of a helmet,
    - or held with the mouth.
  - The same applies to computer keyboards.

- The use of letter stamps may be an alternative to a typewriter. However, letter stamps are far more time consuming.

- Sheets of paper used for writing should have ample space between the lines, about 2 - 3.5 cm. If not, the pupil must be allowed to write across two lines, with a space of oneline between each written line. This will give the writing a clear and easily readable appearance.
- If the motor functions are relatively good, the writing and distance between the lines may be gradually reduced.

5. Preparatory writing exercises

In the following we list a few, simple exercises which may be given prior to letter-shaping exercises.

- Tracing in sand, on sandpaper or in clay.
- Tracing lines with increasing degree of difficulty.
- Drawing between lines. Distance between lines to be reduced gradually.
- Following lines by playing train, car, or fishing (following fishing line from rod to fish).
- Scribbling on a piece of paper.
- Drawing of patterns, filling in figures.
- Completing a half-finished pattern.

6. Exercises with letter shapes

The teacher must be left to appraise each pupil's need for letter shaping exercises. Here are a few, simple ideas in that connection:

- The teacher demonstrates the shape of the letter and traces it with the pupil.
  - The pupil feels the shape of the letter.
  - Always shape the letter according to the way it should be written.
- The letter may be cut out of a plywood, etc.
  - The pupil feels the shape and tries to make a similar shape in the air with his/her hand.
- The teacher and pupil draw the letter together in sand.
- The pupil draws the letter on a sheet of paper or on the blackboard in an exaggerated size.
- The pupil recognizes and picks out the letter among other letters, either written on paper, or fashioned of wood or clay.
- The pupil practises writing the letter on a line, following the teacher's example.
- The pupil practises writing the letter without assistance.
- The pupil learns how to connect the letter with other letters to form words.

Frequent repetitions of the letters are essential.
Making up some simple rules about how the letters are written may be a good idea, particularly for letters which are easily confused, e.g. :

- b - d
- p - b

The principles and exercises used for writing letters can with adaptation also be applied for writing numbers.

PREPARATION FOR ADULT LIFE

Gerd Gylder Corneliussen, Marit Lund, Elsbet Nilsen

INTRODUCTION

All education should take into consideration the child's stage of development and encourage the activities which will be natural for that particular stage. Activities of different character, like games, music, movement, etc. are as important as skills for independent living or reading and writing. However, the teacher should also participate in preparing the child towards the existence as an adult.

Generally speaking, the handicapped find it harder to adjust to a place in society than do non-handicapped people. Disabilities may lead to difficulties in acquiring of the skills necessary for a meaningful adult life, including practical, economical and social problems. There are many reasons for this, but overprotection and an education ill-fitted to needs may often serve to amplify these problems.

For some disabled, Activities of Daily Living (ADL-training) may be useful. The ADL-training is directed at certain areas which are not covered by traditional education. These areas may include these activities that may result in a better independent living like:

- Housework
- Cooking
- Clothing
- Vocational training
- Economy and social training

The training should start as early as possible for pupils with CP. However, this kind of training demands a somewhat non-traditional way of thinking by the teacher. The concept of so-called traditional education does not always fit the needs of the disabled.

To make the ADL-training effective, the teacher should do all the things that the pupil should learn together with the pupil. If the pupil is learning how to climb stairs, the teacher or another person should mount those stairs alongside the pupil. If the pupil is learning how to shop, the teacher must sit down with him/her first to make a shopping list which the pupil can understand, then go to the shops together. The pupil can draw the shopping list if he/she is unable to write.

ADL-training demands resources as well as new thinking. The school is not there

for the learning of reading and writing only. The school should be a place where the pupils learn to exploit their own resources in the widest sense. That will give the individual pupil the best possible chance to cope on his/her own in society. For the disabled, this may encompass anything from expressing that one is thirsty, not hungry, to the performance of daily tasks the same way as non-handicapped people. The basis for this training must be the resources of each child. An important question will be:

- can the pupil's functions be improved by the employment of various aids, or
- can more training help the pupil to master more skills?

If it is possible for the teacher to co-operate with other experts, e.g. physiotherapist or ergotherapist, a better assessment of the pupil's physical capabilities may be achieved. If not, the leader has to try out her/his own ideas.

THE INDIVIDUAL AND THE ENVIRONMENT

The goal of the education and the ADL-training will at all times be to prepare the pupil in the best way possible for an integrated part in his/her environment, or in the environment where he/she will live as an adult.

In order to achieve this, the following points may be well worth considering:

- Can the environment be changed to enable the disabled to master more than at present?
- What does the pupil need to practise in order to function optimally within the family, at work in the home environment, socially or at work away from home?
- Does the home, or the local environment, need more information about the handicapped in general and about members of their family in particular?
- What kind of response (feed-back) does the pupil need in order to continuously improve his/her functions?

1. Adapting the environment and determining the child's needs

By attempting to adapt the local environment to the needs of the disabled, the disabled may be given a chance of mastering more tasks without special aids.

If he/she has problems getting out of bed,

- A slight elevation of the bed may be achieved with the help of some blocks under the four legs.
- Handles can be fashioned and fitted to enable the disabled to get in and out of

bed by himself, if the necessary training is provided.

Many details can be changed by very simple means, making it possible for the disabled to move about the house and the immediate surroundings without assistance.

To adapt to and to learn many of the basic skills often take a lot longer for disabled than for others, either as a consequence of their physical disabilities or due to mental retardation. What kind of skills they should practise, and on what level of accomplishment the training should be based, must be determined by the disabled child's level of functioning and interests and by the goals at which the training is aimed.

Reading may prove to be important for a person's better orientation and participation in society. If the pupil experiences problems relating to the learning of how to read, it may be relevant to teach the pupil some clues. By clues we generally mean specific words, pictures or signs which will enable the person to understand the whole message. The message must be relevant for the individual, for example, a way to recognize which door leads to the toilet.

Practising with clues may also facilitate the expression of needs concerning actions and destinations.

2. Encouraging responses and other rewards

Disabled pupils will often meet challenges which they cannot master on their own and which may discourage them. It is therefore very important that the training be followed up with positive responses. The pupil must be made to feel that he/she gradually accomplishes more, even if the victories are small and the progress slow.

Various forms of encouragement may be relevant at the end of the training session.

- Verbal praise: Well done! You did this very well!
- Encouragement while the task is being done.
- Other forms of encouragement:
    - When the task is completed, the pupil may choose what he wants to do for a limited period of time:
        - Play, play a game, be read to, etc.
          The "reward" should be agreed upon beforehand.
    - Some candy, fruit or food which the pupil particularly likes, after the fulfilment of the task or when something is correctly executed.
        - One registers trials of problem-solving or training attempts. The pupil must be shown the registrations. At a certain number of correct scores, the pupil receives positive feed-back as previously agreed, or which the teacher knows that the pupil particularly appreciates.

SOME PRACTICAL-IDEAS FOR EVERYDAY LIFE

1. To wash oneself, and to brush one's teeth

- Make sure that the position is safe and stable.
    - A standing position should have support possibilities against a wall or by leaning against the washbasin or a table with washing bowl.
    - Washbasin/washing bowl should be placed at the correct height for sitting or standing.
    - A washing mitten may be used instead of a cloth, particularly if the pupil has problems with gripping.
    - A soap bar fastened to the washbasin, etc. is also a good idea.
    - Towels must be placed within reach.

2. Getting dressed and undressed and comb one's hair

- Once again, the position is important. Security and a well-developed balance are conditions for tackling these tasks.
    - Grips or grab handles within reach are useful, making it easier to get up and find support.
    - Corners can also give good support.
- Choice of clothing is of course important.
    - Loose fitting garments
    - Stretch fabrics
    - Ample openings and simple closing devices make the act of dressing

and undressing easier.

- If buttons are necessary, they should be big and sewn on with long "necks".

  May be substituted by *velcro* where available.

- Shoe horn may be a good help in getting shoes on.

3. Manage alone on the toilet

- Grab handles on the walls are often useful in toilets.
- A special stool on the toilet may be necessary to allow the disabled to sit securely.

4. Go to bed and get up again

- A bed with the correct height is essential to facilitate getting out of it.
  - If necessary, blocks may be put under the legs to increase the height.
- A firm mattress makes it easier to turn around in bed,
  - Also to sit up.

5. Eat and drink without aid

- Be particular with the sitting position.
- Use bowl or put an extra edge on the plate to make it easier to get the food onto the spoon.
- Spoon/fork should be fitted with thicker handles (rubber, wood, etc.) for easier gripping.
- Cups with big handles are easier to grip and hold.
  - Two handles are often necessary for good stability and symmetry.

6. Manage tasks in the kitchen without aid

- The kitchen counter should be the correct height for work, both sitting and standing.
  - For work sitting down, there should be ample leg room.
- Correct work height is important also at cooker/range.
- Additional space on same level is necessary, in order to avoid difficult lifting of hot pots and pans.
- Use pans with good handles.

Small aids in the kitchen can often ease the work.

- Cutting boards with nails to fasten things which are being cut.
- Non-slip surfaces to make utensils steady during work.
- Many utensils are also available with bigger handles to facilitate handling.

SPECIAL TASKS WHICH MAY REQUIRE PRACTICE

- Unaided use of public transport
- Receiving and understanding messages and instructions
- Ability to communicate
- Reading simple texts
- Turning book pages
- Writing with pencil
- Relating to time/learning how to tell the time
- Using money
- Shopping
- Knowing how to weigh and measure
- Opening bottles, tins and packages
- Carrying things
- Getting water from the tap or a container
- Unlocking, opening doors, moving away curtains
- Finding things in cupboards, etc.
- Tidying, cleaning, etc.
- Performing work outside home

EDUCATIONAL AIDS

Gerd Gylder Corneliussen, Marit Lund, Elsbet Nilsen

A disabled pupil is faced with a multitude of problems in the course of one single day, and both the school and its facilities, as well as the education itself, must be adapted to the pupil's needs and resources. The goal is to make it possible for the pupil to follow the curriculum and manage the school situation in the best way possible, as any other pupil. There are some simple aids available which may reduce the practical difficulties and totally or partly compensate for the child's functional disabilities. Such aids will increase the pupil's independence and stimulate activities and development.

It will be necessary to adapt as well as create special aids for many people with CP in order to enable them to be more functional. This may include considering changes in buildings (the dimension of stairs), facilities used for managing one's daily living and educational material.

1. The school building

The first problem is usually how to get into the school building. A simple ramp or incline makes it possible to avoid the stairs and the pupil may be able to enter the building without assistance.

A handrail along the steps may be sufficient to enable walking pupils with balance problems to manage on their own.

High door sills are serious obstacles to many disabled people. A wooden plate or some boards may eliminate these obstacles.

In the toilet it can be necessary to fit grab handles on the walls, maybe even a special stool to enable the pupil to sit alone without support.

2. The classroom

The classroom should be located near the entrance in order to enable the child to get in and out of it quickly and easily. A disabled person needs ample space around himself to be able to move without hindrance.

Place the desk where it is easily accessible and where the pupil is within reach of things which may be needed during the tuition.

Good lighting is also important, as well as the location of light sources in the classroom. The light source or the child's working place should be placed in such positions as to make it easier to pay attention and concentrate.

3. Transfer: moving from one facility to another

Walking aids

A means of transportation is often needed in school. Even if the child is able to walk, the actual act of walking may be so demanding that a wheelchair or a walking aid is necessary, at least for a part of the school day. It is important to find a means of transportation which the pupil can operate on his/her own, independent of assistance from others.

It is also possible to make simple walking aids with varying support for some pupils. Imagination, ingenuity and access to materials and equipment are key words.

Wheelchairs and other wheeled transportation aids

The size of a wheelchair must be adapted to the child. Big chairs may be easily adapted by the use of cushions, and the driving wheels moved forward to make it easier for the child to reach them with the hands. Tall back rests and arm supports which reduce the freedom of movement, should be removed/cut off.

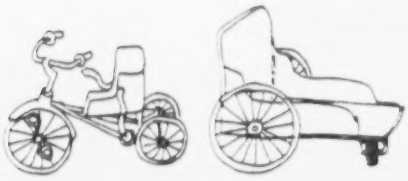
Make sure that the child sits comfortably.

Some pupils may be able to use their legs to propel themselves forward if they are sitting low enough to reach the floor.

Chairs with good stability and big wheels are well suited for this (not office chairs).

A big three-wheeler (tricycle) or a bicycle with supporting wheels are excellent means of transportation outdoors. Foot rests with straps on the pedals make the pedaling easier. Many children may also need back rests.

Various types of roller boards (skate boards), go-carts or push chairs are other possibilities.



4. Working position or posture

A good working position is important for everybody, but most of all for the disabled who may have difficulties finding functional communication and working positions. They may also have difficulties changing position when feeling uncomfortable.

Changing position will not only be important for the sake of better function during activities, but also for the sake of a better physiological function.

Changing position will be necessary for making it possible for the person to receive new impressions and experiences. Sitting down most of the day, with little or no possibility of changing positions as the non-handicapped may be doing, is both physically and emotionally stultifying.

People with CP should daily be helped into different supine positions, sitting positions and standing positions. One must give each person the necessary physical support needed in order to enjoy these positions.

The person should not use energy for staying in a position. The position should help to free energy for observing the world or for taking part in a planned activity.

Sitting position

Children with CP suffer often from abnormal muscle tonus and uncontrollable reflexes in addition to distortions, and they may need extra support for safety and security.

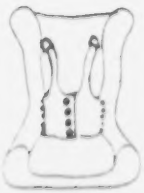
The sitting position influences all the other body movements. If a lot of strength and energy is spent on just sitting, it is not easy to concentrate on exercises and even more difficult to use the hands to do things, such as writing.

Problems:

- Abnormal muscle tonus, etc. can make it difficult to bend at the hips,
- the pupil may easily slide forward on the seat.
- Their legs often cross involuntarily, which makes it even more difficult to keep the balance.
- Head and shoulders are pressed backwards and it becomes difficult to use the hands.

What to do:

- The sitting position should be as symmetrical as possible.
- Correct seat depth and height is important.
- The legs should get good support on the floor or on a foot rest.
- Support at the hips and sides is often a valuable help.
- If a head rest is necessary, it should not be angled to such an extent that the head is leaning too far backwards.
- Seat belts and safety harnesses are often necessary.
- A good sitting vest helps the child to sit more upright in the chair.



Alternative sitting/lying positions

Even if a functional working position is found for the pupil, he/she should not be left sitting in that position all day long. It is necessary to change the sitting position frequently in order to stimulate development and avoid distortions.

Some kind of sitting bag - filled with polystyrene pellets - is excellent for relaxation, and may be used when resting in the prone position on the floor.

A wedge shaped pillow is another good support when lying on the stomach. Such a wedge may be made of wood padded with foam rubber, and must be high enough to enable the child to support himself on the elbows.

Standing positions

Various tilting boards and standing boards may be useful, helping to stretch the body and transfer weight to the feet and legs. The pupils may well be activated in this position, too. For those with lesser functional handicaps, a strap around the bottom may be all that is necessary to keep them safely in standing positions, without fear of falling.

5. Working desk or table

The table is another element which influences the working position.

- Correct height is very important;
  - Not too high, causing the shoulders to rise,
  - Not too low, causing the back to bend.
- The pupil must sit comfortably;
- Close to the table to get as much support as possible.
- The angle of the table will depend upon the child's vision. Some children with CP will need to have toys, books and paper placed in special angles in order to make the utmost of their vision.
- An angled table or work top may however often be advantageous. The angle of vision will be straighter and the pupil needs not bend forward to read.
- A cut-out semicircle in the table for the torso allows a secure position, at the same time giving good support for the forearms when writing.

6. Attachments

Pupils with CP often suffer from involuntary movements and may experience problems because materials, etc. are not lying still. A variety of non-slip supports or pads is available, made of rubber, foam-rubber, plastic, etc. Other objects may be taped to the tabletop, clamped down with small clamps, clothes-pegs and clips, or

weighted down with sand bags, weights and stones.

An edge around the tabletop may also stop things from sliding off the table.

7. Writing utensils

The simple act of writing with a pencil incorporates a variety of skills or characteristics. Most important is a good sitting position, as mentioned previously. In order to manage the delicate movements of the wrist, shoulder stability is necessary, as well as a good grip. The sheet of paper or book must be held steady with the one hand, while the other writes, and eye/hand co-ordination is essential.The brain damage makes all this nearly impossible for many CP-children.

- Chunky, fairly soft pencils are preferred. (Soft to avoid having to press hard against the paper and chunky for easier gripping.)
- Pencils with extra thickness are useful for many categories. The extra thickness may be achieved by padding the pencil with soft rubber, plastic, cork, etc.
- Others may need more specialized writing aids.
    - A cross-grip allows the hand to work in a more functional position.

Writing with a pencil may be quite impossible for some pupils, and we don't want pupils to struggle hard in order to produce a more or less unintelligible handwriting when there are so many aids available. Such aids may save a lot of energy in the act of writing, channelling it into more constructive schoolwork.

- An electric typewriter will greatly facilitate the writing effort for many pupils, and various extra aids make that tool available for many more.
- A large, wooden plate to support the forearms, with a cut-out in the table for the torso, gives stability and rest for the arms, and makes it easier for the child to use his fingers.
- A special keyboard-plate of metal or plastic prevents the pupils fingers from hitting two keys at a time, simultaneously giving support to the fingers.

For pupils with more serious disabilities, there are remote-controlled typewriters and computers with special programmes which may be operated by only one or more keys or switches. The switch is positioned to enable the pupil to use that particular part of the body over which he has the best possible control - finger, palm, foot, head, etc.

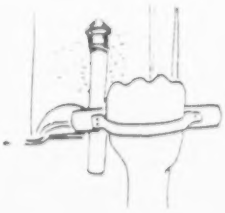
If the pupil is at all able to learn reading and writing, there is nearly always a technical solution to the writing problem.

Pupils who really need a typewriter usually have very poor finger motor, seldom using more than one or two fingers. The pupil must learn to operate the machine, become familiar with its functions and where the letters are placed and find out how to hit the keys before demands are made on the quality of the writing.

8. Reading aids

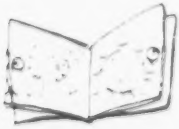
CP-children have often problems following a line when reading.

- With the simple aid of a ruler underneath the line, this problem may be overcome.



- A support for the book improves the angle of the book and makes it easier to read. If the support is adjustable, the angle may be varied according to individual needs.

- Another problem which is frequently experienced, is turning book pages. Some pupils may benefit from the use of a finger stall; others from a stick, etc.



- Books with thick pages and room between each page are the easiest to handle for pupils with poor finger motor.
- Large paper clips or clothes-pegs may be placed on the pages (stiff paper), or
- Books may be prepared with a piece of plywood, plastic or wooden beads between the pages.

9. The arts

Activities that promote creativity are important for all people in all ages. For most pupils it is more important to be allowed to create something of their own than to make something nice with a lot of help. Small, practical aids may however make it easier to accomplish this. In addition most of these activities also indirectly add to the development of motor skills.

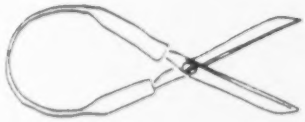
Choose activities which can easily produce results and which the pupils can manage without too many problems or extensive assistance. This will promote the pupil's experience of mastery and encourage for new ventures.

Pencils and colours

Thick pencils and brushes are very suitable (see Writing aids) and paint boxes with large colour areas are relatively easy to handle. The water jar must be stable to avoid overturning, fairly wide at the base and only half-full of water.

Scissors

Using scissors is difficult as it demands delicate movements of both hands simultaneously. A pair of scissors with large hoops is easier to handle if such is at all available. Ordinary scissors fitted with extra handles and fastened to a wooden plate can make this operation possible for many pupils.



Scissors for the left-handed are available.

Embroidery

Embroidery on coarse material with a large needle is a good activity. A large embroidery frame fastened to the table may facilitate this operation.

10. School garden

Nature is a great teacher, and a garden may be utilized to give the pupils training and experiences, in different areas as well as a lot of pleasures. A multitude of activities may be performed in a garden; activities which offer training of senses, perception, motor functions such as co-ordination and balance, as well as testing the understanding of concepts and the ability to function socially.

In order to enable pupils who are unable to walk, or the users of wheel chairs, to enjoy the garden, it must be specially adapted to allow the use of various aids. Crops must be grown in boxes, frames, barrels, etc. which are high enough to be reached from wheel chairs or a standing position. Plants can be planted in such a way as to enable the pupil to lay on the ground while attending to the plants, touching and smelling them.

Other pupils may be able to work sitting on the ground if they are supported by an angled seat, etc. Still others must be in the prone position, aided by wedge shaped pillows, or lying on the side, but the latter position offers only limited work radius.

11. School kitchen

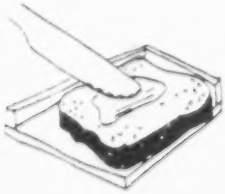
Garden products are an excellent basis for training in the school kitchen.

Tables or work benches of a suitable height are prerequisites for this kind of activity. Specially prepared kitchen utensils may also necessary.

Some examples of well-appointed utensils, particularly suited for pupils capable of using only one hand:

Wooden board with nails to fasten things to be cut (vegetables, meat, etc.).

Board for buttering.



12. Aids for pupils without the ability to use their hands

Some pupils are not able to use their hands, but may have control over their feet and can do simple things with them. Others have better control over the head movements, and some may even be able to use a mouth stick or a stick fastened to their forehead.

A mouth stick

A mouth stick can be very simple:

- A mouthpiece which they can clamp their teeth around and which they may point or write with.
    - The mouth stick can be stored in a special rack or stand, enabling the pupil to get hold of it unassisted.
- The advantage of a mouth stick is that it is easily portable, and that the pupil in most cases can put it in the mouth and take it out again without assistance.
- The disadvantage is that it prevents talking when in use, and demands good mouth motor and head control.

A forehead stick

- A forehead stick demands less head control, but the pupil needs assistance in putting it on and taking it off.
- When it is not in use, it frequently gets in the way of other tasks.
- A forehead stick can for instance be fashioned with the aid of a bicycle helmet.
    - It is essential that the helmet is a tight fit, preventing it from sliding off when the stick is being used.

Various games are suitable for practising the use of mouth or forehead sticks. A good idea is to fasten a small magnet on the end of the stick, using pieces with paper clips or other small metal objects glued on. A painting brush or pencil may also be attached to the stick, enabling the child to paint or draw, etc.

Again, a good working position is important. When the rest of the body is stable and relaxed, better head control is achieved. Spend some time trying out various angles and stick lengths to find the optimal solution. A slightly tilted tabletop or work surface may improve results.

QUALITY OF LIFE: THE ARTS AS A TOOL FOR SELF-AWARENESS, SOCIAL INTERACTION, EXPERIENCING, EXPRESSING AND SHARING FEELINGS

Miriam Donath Skjørten

WHAT DO WE MEAN BY QUALITY OF LIFE?

Quality of life includes the fulfilment of basic needs like physical comfort as housing, food, hygiene and medical care, social and emotional awareness and interaction and access to knowledge.

It is rewarding to see children with handicap increase their knowledge and overcome some of their functional problems. However, the question may be raised whether training of functions often overshadows the needs for social and emotional awareness and interaction.

The aim of this chapter is to share some thoughts about how one can increase the social and emotional awareness and interaction of severely handicapped persons - both children and adults.

The word "child" will be used through out the chapter; however, the chapter also applies to adults.

The basic things to remember are:

- A person with handicap should first of all be considered as a person, as a whole individual with physical, social, emotional and intellectual needs and capacities and not as an amalgam of independent special problems that need treatment.
- Children with handicap are individuals with needs that are personal and the fulfilment of these needs should be adjusted accordingly.
- Children with handicap should be encouraged to be active, to interact and to communicate and therefore to take initiative (see also chap. II).
- Children with handicap must be given the time needed to develop awareness so that they may **experience** emotions, social belonging and interaction.
- Children with handicap must be given the time needed to develop tools to **express** emotions and actively interact with the people around them.
- Children with handicap must, like other children, have the opportunity to influence their lives and to manipulate their physical surroundings.

- Children with handicap should, side by side with their growing awareness of mastery and competence, also become aware of their weaknesses and the possible help they may need in mastering their lives.

WHO CAN CONTRIBUTE TO THE QUALITY OF LIFE OF CHILDREN WITH SEVERE HANDICAP?

Generally speaking one can say that a country's laws, legislations and economic policy will be fundamental for the quality of life of all citizens, including the handicapped. However it may prove to be important to make special efforts in order to increase the quality of life of children and adults with handicap. Parents, teachers and psychologists should agree upon and share the attitudes needed in order to do so. It will also be of great help if health personnel will not only focus on needed treatment but take into consideration the whole person and this person's whole life situation.

Those who can contribute most to the quality of life of children with handicap, and especially those with severe handicaps, will be parents, siblings, and teachers. They are the ones who spend the most time with those children, know them best and are in the best position to interpret and understand them, interact and communicate with them and develop empathy with them.

HOW CAN WE IMPROVE THE QUALITY OF LIFE OF PERSONS WITH SEVERE HANDICAP?

We always think that knowledge and better performance will result in a better quality of life of individuals, groups and nations. This is true if in the process of sharing knowledge we also promote emotional, social and cultural values. This is important if new knowledge is to become integrated within the person and stimulate to creativity rather than result in mechanical behaviour.

The emotional and social values are strongly bound to culture. When sharing one has to be careful with the integrity of those one shares with. Existing cultural values must be supported and promoted. Sharers must be careful not to impose their cultural values on those who are receiving help.

The cultural values are found in different aspects of life, in religion, in the ways of building houses, in the ways of preparing food, in clothing and what we call the arts, traditional and modern.

Children with severe handicap have for years been taught and trained to give expression to some of their basic needs. This is very important. However, time has come to discover in which ways these children also can become aware, differentiate and communicate their emotional needs and experiences. This may increase their sensitivity and give them the possibility to develop empathy, which will give them greater capacity for interaction and mutuality.

1. The arts as a tool for experience, interaction and communication

It is presupposed in this chapter that severely handicapped children receive correct and sufficient nutrition as well as physical comfort, socio-emotional attention and medical care.

I am going to explain and give some examples of how teachers (parents or siblings) can help to improve the quality of life of children with handicap through activities. However, good activities provide only a structural frame to help mobilize one's personal inner resources and involvement.

Whether or not a child learns verbal language, non-verbal elements of communication will always play an important role in interaction and communication, creating important nuances in all communication.

Every means or form of expression has some possibilities that are unique for that specific form. This is one of the reasons why the different art forms, dance (movement), music, painting, sculpture and traditional crafts, are all important for us. This is why these ways of expression, and not only verbal language should have an important place in the education of the all children, especially of children with handicap.

Non-verbal forms of communication, as manifested in the arts, are particularly important for children with handicap because they add to and fill in existing verbal language or substitute for its lack. It will also offer the child impressions he otherwise will not have the opportunity to experience.

Through the arts, consumed actively or expressed, a person may receive: a variety and richness of all kind of experiences, a variety and richness of emotional and social experiences in particular, inspiration for thoughts and fantasy, possibilities for expression and possibilities for self-realization.

What is special about the arts?

Arts such as dance, music, painting, sculpture, crafts can: preserve cultural heritage; create, redeem, abstract, give structure and form feelings and thoughts; integrate feelings and thoughts; unite movement, rhythm, sound and form; unite movement or sound on the one hand and stillness on the other one; unite tension and relaxation; unite space, time, force and flow; integrate body and soul; unite play and ritual; unite truth and fairy-tales; unite fact and fantasy or dream; and unite what is of individual and what is of common interest.

I have chosen dance/movement and sound/music activities to show why and how one can help to enrich the soci-emotional awareness of severely handicapped persons. I have chosen dance/movement and sound/music because they are always available to us and can be independent of facilities.

2. Movement and sound qualities

Planned as well as impulsive use of movement and sound activities can add to a child's social interaction and development of mutuality as well as emotional and social self-realization and expression. These are important elements if we want to increase the quality of life of all people and especially of people with handicap.

If we want to achieve this, we must put the emphasis on **interaction** rather than on **performance**. The tool for interaction will be movement accompanied and/or inspired by sound, or we may call it dance and music.

I would like to clarify the following concepts as used in relation to the purpose of this chapter.
Movement is change between tension and relaxation with an extension in space and time.
Dance is movement used as a non-verbal tool to express or describe emotions, states of mind, thoughts, ideas, situations.
Sound is any sound created through the use of body parts, things in the environment, musical instruments as well as sound appearing in nature.
Music is sounds organized in some way or another used to express or describe emotions, states of mind, thoughts, ideas.

By moving or producing sounds we express ourselves. We may do this on **purpose**, we may do it without planning but **be aware of it** and we may do it **not being aware of it**.

I would like to point out that most forms of expression will directly or indirectly include body movement and the quality of this movement will be an active part of the expression. This will also be true when talking, singing, clapping hands,

shaking a rhythm instrument, playing the drum, playing a string instrument, etc.

Movement qualities

People differ from each other in many ways, including movement quality. We can recognize people by the the way they move. A person's muscle tonus (muscle tensions), the way the body is built and body size as well as the person's state of mind and emotional experiences will all influence movement quality.

Interaction through movement will require knowledge of the communicative elements of movement. Changes in these elements will result in changes in communication.

The main elements that influence movement quality can be described as follows:

- **Energy**

  The main question is whether one uses much or little tension/energy when moving:

  - does one use a lot of tension or little tension in an expressive movement?
  - what is one's relation to gravity?
    - does one give oneself to gravity?
    - does one give up to gravity in resignation?
    - can one over win gravity?
    - does one fight gravity?
  - does one use strong movements?
  - does one use gentle movements?

- Space

  The main questions are a matter of:

  - size: large and small movements
    - does one use much space or little space?
    - are the separate movements large or small?
  - shape
  - direction of movement
  - linear or three dimensional
    - does one move through space directly or indirectly?
    - are the movements one makes:
    - round patterns?
    - straight patterns?
    - angular patterns?

- **Time**

  The main questions are a matter of:
  - speed
  - rhythm
    - does one move quickly?
    - does one move slowly?
    - does one use sustained movements?
    - does one use short lasting movements?
    - is there a rhythmical pattern to the movements?
    - **how are the pauses, or what is the rhythm between movement and stillness?**

- **Flow**

  The main question is how energy, space and time interact:
  - is the flow of movement free?
  - is the flow of movement controlled?
  - is the flow of movement uncontrolled?
  - is the flow of movement over-controlled?

It is important to note that it is difficult to separate these elements from each other. When actually moving, these elements will integrate and expression and movement quality will be manifest. Changing one of the above-mentioned elements may result in a change of quality and may therefore give movement a different meaning.

Sound qualities

We can find parallels between the elements of movement qualities and sound qualities. As people differ from each other in movement quality, their voices will have also different qualities.

We can recognize people by their voice. Voice may also tell us about a person's state of mind. We produce also sound when moving. This sound will also change when the movement is changing.

Using sound and music together with movement in an activity of interaction will also require some knowledge of the communicative element of sound. It is difficult to separate these elements from each other.

There are parallels and differences between the the elements of movement and sound qualities.

- **Energy**
  The main question is whether there is a lot or little sound:
  - is there only one sound?
  - are there many sounds?
  - is the sound loud?
  - is the sound quiet?

- **Quality of sound timbre, sound colour**
  The main questions are:
  - what sounds do appear at the same time?
  - what is (are) the source(s) of sound?

- **Time**
  The main questions are:
  - speed
  - rhythm
    - is there an underlying pulse?
    - if there is, how fast or slow is the underlying pulse?
    - is the sound sustained?
    - is the sound short lasting?
    - is the sound short lasting and sudden?
    - is the sound organized in quick rhythmical patterns?
    - is the sound organized in slow rhythmical patterns?
    - is the sound organized in even rhythmical patterns?
    - is the sound organized in uneven rhythmical patterns?

- **Flow**
  The main question is what kind of flow there is in the music:
  - is the flow of sounds free?
  - is the flow of sounds uncontrolled?
  - is the flow of sounds controlled?
  - is the flow of sounds over-controlled?
  - what sounds follow each other (are they jumpy in range or do they follow in a sort of a scale)?
  - is the sound range large or small?
  - does one use the sounds in an order that can be related to a scale or does one use one sound here and one sound there?

Interpretation of movement and sound qualities

The same movement and/or sound qualities may have different meanings for different individuals. Grown ups may express themselves differently from children;

this may be due to a general maturity as well as specific maturity and/or stagnation. Women may have different ways of expression from men or women's movement qualities may be interpreted differently than those of men.

People from the countryside may express themselves differently from town people, and people from one ethnic culture may express themselves differently from people from another ethnic culture. Religion and other traditions may also result in different use of movement and therefore interpretations.

The use of energetic strong movements may be looked upon as constructive and positive in one culture and be seen as unacceptable and destructive in another; or they may be related to men rather than to women.

However, we can find qualitative elements which are universal, such as the fact that a slow swinging continuous movement and/or monotonous, quiet is soothing and comforting to most children and adults.

Movement/dance and sound/music integrate naturally into one activity, supporting and completing one another. The rest of this chapter will discuss movement and sound as one unit.

3. Movement and sound and children with CP

It is important to remember that children with CP, especially the severely handicapped, lack movement experience and therefore their movement communication will also be poor. But, these children, like all children, have a basic enjoyment of movement and movement also for them is an elementary tool for communication.

One must also note that children with CP have a basic enjoyment of touch, but may have over-sensitive skin, resulting in discomfort when touched.

There are many things the teacher should know before starting to plan activities. Often one also must observe or investigate while carefully doing some activities. Some of the information one must have includes general knowledge about the child, some of which will concern specifically dance and music activities.

Of general information it will be important to know:

- Who does the child like to be together with?
  - Grown-ups?
  - Children with/without handicap?
    - same age?

    - younger?
    - older?
- Where does the child like to be active?
- Where does the child like to be cosy?
- How much stimulation will the child tolerate?
- Positions that are good for the child
    - What activities can these positions promote?
- Good places (indoors as well as outdoors) to be active with child
    - What activities can these places promote?
- Aids that will make the child more receptive and more active
    - What activities can these aids promote?
- What is the child's natural general quality of movement?
- What is the child's general state of mind?
    - Is the child slow?
    - Is the child quick?
    - Is the child intense?
    - Is the child phlegmatic?
- What type of sound/music does the child like?
- What type of sound/music does the child like, (but that makes the child jump)?
- What type of sound/music is uncomfortable for the child?
- What movements can the child perform?
    - What does the child like/dislike to do?
    - How quickly can the child perform these movements?
- What sounds can the child produce?

We must take into consideration the spasticity these children suffer from if overstimulated. One must at times use vigorous and/or fast music, but perform gentle and/or slow movements. The music will then compensate for vigorous movements.

Below are seen ideas for activities and aids, which will require adapting to each child or group.

When you move with a child, you should consider this as moving with a partner, sharing. You must consider whether movement should be:

- with a partner?
- against a partner?
- shared with a partner?
- away and towards a partner?

You must also decide if those who move should touch, and how they should touch.

DESCRIPTION OF ACTIVITIES

The following articles can be used as aids:

a. rings of bamboo (a hula hoop), size is not so important
b. sticks of bamboo or lightweight wood about 50 cm long. They must have a diameter thick enough so that it will feel comfortable to hold them
c. beach balls of plastic (those one blows up), different sizes
d. thin, colourful scarfs
e. rope
f. foam rubber cushions

The aims of using these aids are:

- To unite and at the same time create a distance between two or more partners; this may make co-operation easier
- To give possibilities for variation with basically the same activities
- To stimulate new activities
- To help the child feel more comfortable, safer and/or more independent to holding, say a bamboo stick rather than the hand of a person

Important things to remember:

- Be sensitive to the child's inventivness and use the child's suggestions - **the child's initiative and your responses should be more important than carrying out your ideas.**
- If the child does something by mistake, you can pick it up and use it constructively.

Get to know and control your body

If we are in the command of our body we may also have a greater awareness of our feelings and emotions.

The aim of controlling the body, in the context of this chapter, will be to increase the possibilities for experience, expression and communication.

Choose first the body parts you know the child likes to be touched; later when the child is used to your touch and enjoys it, try the other body parts.

It is important you touch the different body part in in an order that will give the child the feeling of having one whole body and not a collection of disjointed parts.

1. **Touch the different body parts**
   - in different manners
   - with different intensities

- in different speeds and rhythms
- sing or talk saying what you are touching and doing, and in which manner you are doing it
- use music from a tape that fits the manner you want to do it
  - striking with the whole palm of you hand
  - striking with your finger tips
  - clapping with the whole palm of you hand
  - clapping with your finger tips
- let the child touch you on different body parts and in different manners

2. **Touch and stop**
   - the same as 1., only now you make a point of stopping the activity by stopping the movement, the sound and at the same time you say stop

     Be sensitive to signals the child may give to show the wish to stop and /or restart the activity.
   - let the child do the same with you

3. **Move and stop - you do the main moving**
   - move with the child - the whole child, not only a body part
     - by taking the child in your arms and dancing and stopping
     - by moving the child in a chair or a wheel chair and stopping
     - by putting the child in a blanket and moving the child by pulling the blanket along the floor and stopping
     - by putting the child in a blanket and moving the child through the air swinging from side to side or forth and back and stopping.

     Follow the child's facial expression and body expression.

     Be sensitive to signals for starting and/or stopping an activity. Be careful not to overstimulate.
   - the same as 1. and 2. only now you move the child's different body parts
     - bend and stretch
     - rotate

     Be sensitive to the child's muscle tension and stop the movement when the child may indicate this with a change in muscle tension. React whether the tension has changed voluntarily or involuntarily
   - let the child do the same with you

4. **Move and stop - the child does the main moving**
   - the child moves and stops while you give the sound accompaniment, letting the child to direct the activity
   - the child moves to your accompaniment; you lead the activity

5. **Imitation and taking turns**
   - the child moves and stops; then you move the same way the child did
     A child must have experience to be imitated before we can expect him to imitate us.
   - you move and the child imitates you as well as the child can
   - the child moves; then you move in a different way to continue his movement
   - you move; then the child moves in a different way to continue your movement

6. **Moving together**
   - you and the child are both active and you move together in co-operation

7. **Using energy**
   - touching the child with different intensity
   - let the child **push** or **press** you; the child can do this with
     - hands
     - hands and arms
     - elbows
     - feet
     - head
   - you can do this activity in free rhythm or to a structured rhythm
   - let the child **pull** you
   - **pull** the child
   - you and the child are holding any of the mentioned aids, both are **pulling**
     you can do all these activities in free rhythm or to a structured rhythm

8. **Speed and rhythm**
   You can use movement activities or you can sing or use a musical instrument.
   - You can use activities mentioned above, or an activity the child partially masters, and the speed and /or rhythm of the activity.
     - Slower or faster
     - Changing speed gradually

- Changing speed suddenly
- Even rhythm
- Uneven rhythm

9. Using space

- Large and small movements
- Move away and towards the child
- Move towards and away from the child

Do this in different intensities and speed

Do the same activities with a bamboo ring between you and the child.

10. Swinging movement

Swinging movement is comforting and gives a feeling of being cared for. You must however remember that most children with CP have a different relation to gravity, speed, and flow than other children do.

- You can calmly swing the child (some children may react badly to every movement even to swinging).
- You can do swinging movements with only one part of the body, an arm, or a foot.
- You can hold a scarf or a rope between you and the child and swing the material; the child should also try swinging.
- You can swing the chair the child sits in.
- You can put the child on a blanket or sheet and together with a colleague lift and swing the child.

11. Following the child's mood

If the child has difficulties to express himself, you should do it for him by singing, playing music, dancing with or for the child in the mood you think the child is in. You may describe the child's mood also with words. It is important you follow and see if and how the child reacts to you.

- It is important that the child learns that his mood will create reactions.
- It is important that you learn to differentiate among the different expressions the child may have.
- One learns through experience and through the mediation the surroundings may inspire.

For a child with limited physical possibilities, it will be important to be able to experience and to express himself through others. But it may be even

more important to receive response to what ever expression the child may have. Through experience, the child may develop an awareness of himself and his social surroundings. This awareness will help the child to master interaction and communication.

Through activity with the child, you will also increase your awareness and your interaction and communication with the child will therefore improve.

This will be the first steps towards a better quality of life!

GLOSSARY

Aetiological factors	Causes or significant antecedents of a given phenomenon, e.g. disease.
Articulation	A spoken sound, especially a consonant.
Ataxia	Impaired neuromuscular co-ordination in voluntary muscular movements.
Athetosis	Involuntary neuromuscular movements and facial grimaces as in cerebral palsy, caused by brain lesion (s).
Auditive function	The function of the sense of hearing.
Central speech disturbance(aphasia)	An inability, partial or complete, to understand or express language whether written or spoken, because of injury or disease of the language centres of the brain.
Cerebral palsy	Permanent impairment of movement and posture resulting from a non-progressive brain disorder lesion, acquired during early childhood
Cognitive function	All processes involved in knowing.
Congenital	Actually or potentially present in the individual at birth, whether as a consequence of heredity or of environmental factors.
Curriculum	All of the courses, collectively, offered in a school, college etc. or in a particular subject.
Disability	A lack or restriction of ability, caused by an impairment, to perform an activity in the manner or within the range considered normal for a human being.
Dysfunction	Pertaining to some kind of defective function.
Dyslexia	Impairment of the ability to read, often as the result of genetic defect or brain injury.

GLOSSARY

Handicap	A disadvantage caused by a disability that prevents or limits an individual's fulfilment of a role that is normal, depending on age, sex and social and cultural factors.
Impairment	Refers to any loss or abnormality of psychological, physiological or anatomical function or structure.
Incidence	The number of new cases of a specific condition occurring during a certain period.
Left-right asymmetry	The lateralization of cognitive functions to the left and the right hemispheres of the brain.
Long-term memory	A recollection of an experience hours, days or a longer passage of time after it took place.
Motor speech disturbance	Defective articulation of speech due to impaired control of muscles involved in sound production.
Nystagmus	Involuntary movements of the eyes (or head) composed of alternate slow and quick phases in opposite directions or rapid oscillatory movements.
Oculo-motor defects	Disorder of eye movements.
Perinatal	The period from 27th week of pregnancy through first week after birth.
Pharynx	The cavity with its enclosing muscles, mucous and membrane situated behind the mouth, the nares and the oesophagus (tube leading from the mouth to the stomach).
Prenatal	The period from conception to 27th week of pregnancy.
Prevalence	The number of cases of a condition in existence at a certain time in a designated area.

GLOSSARY

Short-term memory	A recollection of an experience immediately after it took place.
Spasticity	Marked rigidity of movement and inability to relax muscles, caused by brain lesion(s).
Stereognostic perception	The perception of the solidity of external objects.
Strabismus	A muscle imbalance in which the eyes move inward, outward, up or down. The condition frequently is referred to as 'cross eyed'.
Tactile-kinaesthetic perception	The simultaneous perception of touch, weight, position, and the extent and direction of movement.
Transaction	A reciprocal exchange of actions and emotions in human relationships.
Two-point discrimination	Determination of the distance which must separate two points in order that they may be perceived as two by skin or eye.
Visual-motor co-ordination	The co-ordination of sight and movements.
Visual-perceptual function	The awareness of external objects or relations through the sense of seeing.

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Ontario M4G-1R8
Canada.

Oakland Schools Picture Dictionary.
Communication Enhancement Center
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2100 Pontiac Lake Road
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PIC
George Reed Foundation for the Handicapped.
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Peabody Rebus Reading Program.
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Bildkommunikation.
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Alltalk.
Adaptive Communication Systems, Inc.
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